Cross-Cultural Studies in Aesthetic Judgments in Product Design

by

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DEDICATION

This dissertation is dedicated to my wife, my family, and my mom in the heaven.

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PREFACE

The question of "what is beauty?" has been a subject debated for centuries between psychologists and philosophers. This dissertation is to investigate the content of the aesthetic judgment on the object and its association with one's knowledge in the cultural perspective. This work mainly paid attention to the relationship between aesthetic value and cultural differences by using the psychological approach to understand the underlying mechanisms originated from culture.

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ABSTRACT

This dissertation consists of three essays that investigate how different cultural experiences influence people aesthetic judgments, particularly focusing on the aesthetic experience process which includes how people perceive a design product by visual perception, product representation in the diverse contexts, cognitive processing of product recognition, and thus make the aesthetic evaluation for the product. The first essay examined how the joint effect of aesthetics and functionality influence consumer evaluations of the product by moderating individual differences in Centrality of Visual Product Aesthetics (e.g., CVPA). The results indicated product aesthetic value identified as an important factor for consumer evaluation of the product, and it significantly interacted with CVPA. The second essay focused on how the context effect influenced product aesthetic judgments and examined the cultural variation in the magnitude of context effect. We found European Americans and East Asians both preferred aesthetically appealing design objects placed in matched contexts than in mismatched contexts. However, East Asians showed higher tolerance to perceive incongruence when the object was placed in a mismatched visual representation. The third essay investigated whether the product aesthetic judgments could be extended to further cognitive processing such as product recognition. We hypothesized that, liking effect, which consumers construe their aesthetic judgments as the choice and it enables them to remember the objects what they prefer, would be pronounced among European Americans than East Asians did due to cultural model of agency. The results supported our hypothesis indicating a robust liking effect for people were described as independent self in the North American context. This dissertation provides implications for product design, marketing, and social psychology domain, to better understanding the how different cultural experiences influence the product aesthetic judgments on the global marketplaces.

CHAPTER 1

Introduction

The question of "what is beauty?" has been a subject debated for centuries between psychologists and philosophers. According to the dictionary definition of aesthetics is "a set of principles of good taste and the appreciation of beauty" (Koffka, 1935). It is inevitable to say that aesthetic is composed of taste and beauty per se. However, it is vague to illustrate one's taste because it lies in one's sensory response and the content of the object (Walker, 1995). In particular, the content of the object is associated with one's knowledge and how do they understand their world, thus, one's aesthetic judgment is, to some degree, determined by one's geographical, historical and cultural context; and further influences one's personal views, experience, and circumstances. With this respect of aesthetic value and cultural experience, indeed, culture, is a variable held responsible for many of the differences in people's aesthetic choices. Cultural experience shaped our all actions including ideas, values, strategies, feeling, goals, and judgments (Heine & Ruby, 2010). It is essential to say that one's taste is predominantly shaped by the culture to which they belong. Looking at the diversity among cultural expressions in art, fashion, and design, it seems obvious that culture has a huge effect on one's aesthetic value. However, limited attention has been paid to the relationship between aesthetic value and cultural differences. Although there are so many distinct differences of aesthetic value across cultures empirically, there is little scientific evidence testing the role of aesthetic value and cultural differences particularly by using the psychological approach to understand the underlying mechanisms originated from culture.

This dissertation explores how different cultural experiences influence people aesthetic judgments, particularly focusing on the whole aesthetic experience process which starts from people perceive a design object by visual perception, to generate the self-rewarding action in order to make the aesthetic evaluation of the object. In particular, throughout this dissertation work, the term "design object" here refers to "physical product", namely, product design. This research specializes in product design because of it is recognized as a competitive advantage for companies in the marketplace globally. Since many products have reached maturity in their performance and functionality, aesthetic value now plays a more dominant role in marketing and consumers (Postrel, 2003). Therefore, aesthetics is an important dimension that brings pleasure and reflects the individual's values. However, little information exists on cultural differences in aesthetic judgments about products.

Objective and scope

This dissertation aims to understand how cultural experience influence consumer's aesthetic judgment about product design. To investigate how people in different cultural contexts make differing aesthetic judgments about physical products and its visual representation. This dissertation of cross-cultural research mostly lies on the previous work of self-construal (Markus & Kitayama, 1991), cultural cognitive styles (Nisbett, 2003; Nisbett, Peng, Choi, & Norenzayan, 2001), and model of agency (Markus & Kitayama, 2003). These cultural differences appear to be related to an independent society (West) versus an interdependent society (East Asia). In addition, the visual perception has been shown to differ based on cultural cognitive styles (Nisbett, 2003). Westerners tend to be more analytic in their thinking, while East Asians tend to be holistic, attending to the entire field. Based on their work, this dissertation contributes to the understanding of how different cognitive styles originated from culture lead to consumer's aesthetic judgments for products and provides implications for design practitioners, marketers, and cultural psychologists to explore the psychological processes of aesthetic judgments on products in different cultural contexts. It is also to understand the root of an individual's aesthetic value related to cultural experiences.

Past research has shown that the aesthetic experience of an object is an interlinked and inseparable union of sensory response and contemplative experience (Leder, Belke, Oeberst, & Augustin, 2004). As a sensory response, the object is enjoyed for its combination of qualities such as shape, color, texture, that is, for its beauty. As a completive experience, the appearance of the object is studied for its significance and value; this can lead to a discriminating judgment, which is the basis of taste. This research focuses on a specific of aesthetics, namely, product aesthetics; thus the term *product aesthetics* mainly refers to aesthetic judgments of physical product attributes, such as style, material, and color, throughout this dissertation. A concise definition of product aesthetics stresses the physical attractiveness of a product mediated mainly by the visual feature (Hekkert & Leder, 2008). The term *product aesthetics* and *aesthetic judgment* are used interchangeably. Moreover, the terms *objects* and *artifacts* are also interchangeably used throughout the dissertation not only to refer to tangible products but also to include intangible products in a broad range of media.

Structure: Three essays

The first part of this dissertation investigates how the interplay of aesthetics and functionality influence consumer evaluations of products. Past research has shown the role of the visual appearance of product aesthetics as an essential dimension that gives consumers pleasure and reflects their personal value (Crilly, Moultrie, & Clarkson, 2004, 2009). In addition, consumer individual difference in the centrality of visual product aesthetics (CVPA) influences the role of how they perceived the product aesthetic attributes (Bloch, Brunel, & Arnold, 2003). However, little research examines the joint effect of aesthetics and functionality how to interact with consumer individual characteristics. The goal of the first essay (Chapter 2) is to gain a better understanding of the interplay of aesthetics and functionality on consumer perceptions and evaluations of products. Besides, we examined the moderating effect of CVPA in those product attributes.

The second part of this dissertation (Chapter 3) is to explore how the context effect influences product aesthetic judgments across-culturally. Two Studies were conducted by manipulating design objects placed in no context background, match or mismatch contextual background, to investigate whether an aesthetically appealing design object would be liked more if placed in a context that is matched to it than if placed in a mismatched context. Based on previous evidence on cultural variations in cognitive styles (Masuda & Nisbett, 2001; Nisbett, 2003), we also examined the magnitude of context effect by recruiting different cultural groups: European Americans, Asian Americans, and East Asians (Taiwanese).

The third part of this dissertation (Chapter 4) investigates the product aesthetic liking could be extended to further cognitive processing such as attention and memory. We hypothesized people remember the design object what they like and it would be construed their aesthetic preference as a choice, namely liking effect. A major cultural difference has been identified in the form of agency (Markus & Kitayama, 1991, 2003). European Americans who have an independent or disjoint agency are more likely to use their internal attributes guide their actions as choice by expressing their individual preference, whereas East Asians have an interdependent self or conjoint agency, which interpersonal value is over personal choice, as a consequence, individual preference, goals, and motivation are socially anchored. As aforementioned cultural variation in model of agency,

three studies were examined the liking effect would be more pronounced among European Americans than East Asians. Additionally, we also tested the liking effect is context-dependent by manipulating the design object representation and its contextual information (as Figure 1).

In the subsequent chapters, I elaborate on each the three essays with details on theoretical background, empirical findings and discussions.

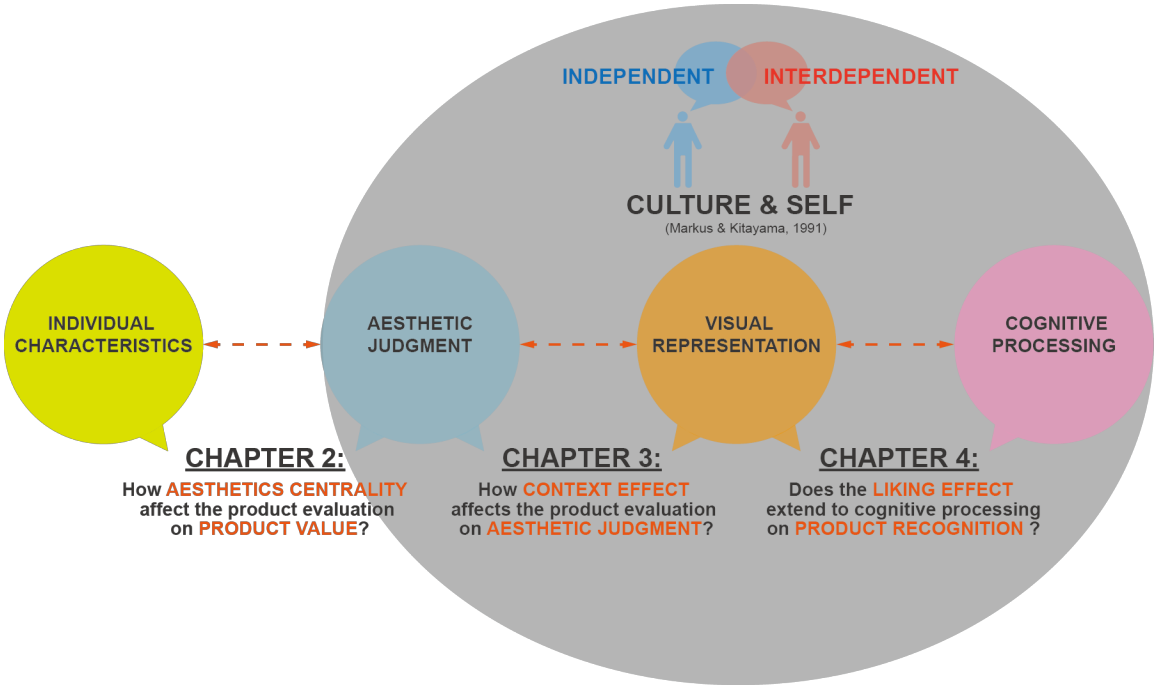

Figure 1. Overview of dissertation framework

CHAPTER 2

The Joint Effect of Aesthetics and Functionality on Product Evaluations

Abstract

This study explores how the interplay of aesthetics and functionality influences consumer evaluations of products, and examines the moderating role of individual differences in the centrality of visual product aesthetics (CVPA). Consistent with prior findings, the tendency to positively evaluate high (versus low) aesthetic products was more pronounced for consumers with higher CVPA. However, low CVPA consumers perceived low (versus high) aesthetic products as having greater functional value. Aesthetics and functionality jointly influenced aesthetic value, product liking, and willingness to pay. There was a greater difference in evaluations between high and low aesthetic products when they had low (i.e., basic) levels of functionality. Thus products low in functionality received a bigger positive boost in evaluations from higher aesthetics than did products high in functionality. These effects, although not moderated by CVPA, suggest that higher aesthetics can enhance evaluations of products with only basic levels of functionality.

Keywords: Aesthetic Attribute, Functional Attribute, Consumer Product Evaluation, Centrality of Product Aesthetics (CVPA)

2.1 INTRODUCTION

Product design can provide a competitive advantage for marketers by communicating to consumers that a product possesses attributes they value (Page & Herr, 2002). Given that many products have reached maturity stages in their development in terms of performance and functionality, aesthetics in design have been increasingly recognized as a key determinant for product success (Bloch, 1995; Postrel, 2003) and a way to influence consumer purchasing decisions (Creusen & Schoormans, 2005; Hoyer & Stokburger-Sauer, 2012).

Prior research has extensively examined the role of visual appearance in products as an essential dimension that gives consumers pleasure and reflects their personal values (Crilly et al., 2004, 2009; Hirschman, 1986; Robert W. Veryzer, 1993). However, the conventional wisdom that "beauty is good" does not always apply. Sometimes, consumers may perceive that if a product looks pretty, it will not work well. The perceptions could then lead to negative product evaluations. Nonetheless, that "attractive things work better," is a notion that aligns with Norman's (2004) assertion that the underlying scaffolding for products must meet basic functionality.

In a modern world that is product-saturated, it is often hard to differentiate products purely by their aesthetic or functional values. Indeed, most products contain both hedonic and utilitarian attributes (Okada, 2005b). Previous research has shown that regardless of utilitarian considerations about a product, aesthetics provide intrinsic value and reflect more hedonic, experiential or emotional aspects of product consumption based on factors such as appearance or styling (Hirschman, 1983; Holbrook & Hirschman, 1982). Product appearance can thus represent the central channel for the relationship between a consumer and product (Hollins & Pugh, 1990). Utilitarian aspects of a product are described as providing extrinsic value and often involves performance derived from product functionality. Prior findings have shown that different affective responses arise from an interplay of hedonic and utilitarian considerations (Chitturi, Raghunathan, & Mahajan, 2007, 2008): products that meet a consumer's utilitarian needs promote satisfaction and products that meet a consumer's hedonic wants enhance delight. However, the interplay between hedonic and utilitarian aspects of a product can be subtle insofar as product appearance does not merely activate aesthetic perceptions but conveys information about functional attributes

that are communicated through metaphors and affordances in design (Norman 1988).

Individual differences in responsiveness to visual aesthetics may also contribute to consumers' perceptions and evaluations of products. Bloch et al. (2003) developed a scale to measure individual differences in the centrality of visual product aesthetics (CVPA), which they define as "the overall level of significance that visual aesthetics hold for a particular consumer in his/her relationships with products" (p.551). The CVPA thus captures a consumer's interest and involvement in product design. Bloch et al. (2003) demonstrated that consumers who are high in CVPA evaluate high (versus low) aesthetic products as more visually pleasing and express more positive attitudes towards the products and greater purchase intentions. However, there is a surprising paucity of research exploring how the centrality of visual product aesthetics may or may not influence perceptions of products with different combinations of aesthetics and functionality.

The goal of the present research is twofold. First, we seek to gain a better understanding of the interplay of aesthetics and functionality on consumer perceptions and evaluations of products. In particular, we examine different levels of aesthetics and functionality interact to influence product evaluations. Second, we explore how individual differences in CVPA moderate the joint influence of aesthetics and functionality on the way the products are perceived and evaluated.

2.2 LITERATURE REVIEW

2.2.1 Aesthetics and Taste

The term "aesthetics" is derived from the Greek word "aisthetesis" which refers to sensory pleasure and delight (Goldman, 2001). Aesthetics has been explored in a variety of fields with respect to a theory of the beautiful, or a person's sensitivity to the beautiful (Stich, 2004). The latter generally described as an individual's aesthetic sense that is closely related to taste. In psychology, taste is in turn viewed as being related to an individual's sense of aesthetics (Berlyne, 1971). In philosophy, aesthetic taste and aesthetic perception are mainly focused on the sensory pleasure of artistic or natural objects (D. Townsend, 1997). In consumer psychology, aesthetics and taste similarly refer to hedonic facets of multi-sensory, fantasy, and emotive aspects of an

individual's consumption experience (Holbrook & Hirschman, 1982; Schmitt & Simonson, 1997), and aesthetic appreciation can occur across objects, people, or consumption environments (Patrick & Hagtvedt, 2011).

2.2.2 Product Aesthetic Value

Within the domain of product design, aesthetics can be explained as the pleasure attained from sensory perception when a consumer perceives a product (Hekkert, 2006; Hekkert & Leder, 2008). A more narrow definition of product aesthetics refers to sensory pleasure generated from the physical attractiveness of a product mediated mainly by the visual features (Crilly et al., 2004; Hekkert, 2006; Hekkert & Leder, 2008). Judgments of product aesthetics originate from product appearance, and the properties of a product such as form, color, or material, influence product evaluations. The past two decades of research has documented the extent to which consumers value product aesthetics. In general, product aesthetics exert a strong influence across a wide range of consumer responses including aesthetic appraisal (Holbrook, 1986), emotion (Chitturi et al., 2007, 2008; Desmet & Hekkert, 2007), motivation (Mowen, Fang, & Scott, 2010), choice (Creusen & Schoormans, 2005), self-affirmation (C. Townsend & Sood, 2012), and purchase intention (Bloch, 1995; Bloch et al., 2003; Schnurr & Stokburger-Sauer, 2016).

2.2.3 Product Functional Value

In product design, the functionality of a product typically refers to product specifications or utility. Functional design is defined by the factors, benefits, characteristics, and features that are incorporated into the product to provide utility (Bloch, 1995; Norman, 1990, 2004) that facilitates the accomplishment of a task (Bloch, 2011; Boztepe, 2007). Functionality or utility is also often viewed as an extrinsic value which provides benefits such as reliability, efficiency, or ease of use (Voss, Spangenberg, & Grohmann, 2003). Another stream of research even refers to functionality as the "dominant design" in the marketplace, and characterizes a product's functionality in terms of technology and combination of components that are ultimately successful in the market (Abernathy, 1978; Srinivasan, Lilien, & Rangaswamy, 2006). This latter view is arguably extreme insofar as most products are not valued solely based on functional utility. We adopt a view of functional value that reflects the extent to which products perform the way they are supposed to

perform (Batra & Ahtola, 1990; Holbrook & Hirschman, 1982). This is in line with the view advanced by Creusen (2005) that products differ in the degree to which they are suited to deliver on their basic utilitarian attributes. According to this perspective, the functional value reflects consumer perceptions of a product's ability to fulfill its purpose (Homburg, Schwemmle, & Kuehnl, 2015; MacKenzie & Lutz, 1989). For many consumer products, the degree of functionality ranges from a basic level (with relatively few functions) to the extensive (with more functions). However, it is clearly the case that more is not necessarily better and there is likely an inverted-U relationship between the number of features and product value. In the present research, we focus on the monotonically increasing part of the relationship whereby a low level of functionality refers to a product having the necessary features for it to perform properly and higher levels of functionality indicate that the additional functional features contribute positively to product performance. For ease of exposition in the present research, we henceforth refer to these functionality levels as low and high, respectively.

2.2.4 A Balance of Aesthetic and Functional Values in Products

In general, consumers appreciate a congruence of aesthetics and functionality in product design. As such, both aesthetics and functionality are important factors in conveying product value to consumers. The product aesthetic appearance can often determine consumers' first impressions of a product and quickly communicate the product advantage to consumers. Product appearance can embody the hedonic component in design (J. D. Townsend, Montoya, & Calantone, 2011) and influence consumer attitudes (Bloch, 1995; Creusen & Schoormans, 2005). Product appearance can also provide visual cues that activate different perceptions through which products are interpreted, such as additional cues for functional purpose. Norman (1990) first introduced the term "affordance" in design which originated from Gibson (1977) who referred to product attributes as actionable properties between the world and an actor (e.g., a person). In product design, product appearance often contains "perceived affordance." For example, an iconic whistling teakettle "Alessi Tea Rex" designed by Michael Graves, the famous late architect, and designer, utilized strong affordance references to communicate use: the blue handle signals it is cool to touch while the red bird signals warmth. Dieter Rams, an influential industrial designer, explained the value of product appearance as interacting with aesthetics and functionality as one of the ten principles for good design (Rams 1993). From the perspective of aesthetics, aesthetic value (or

product appearance) of a product is integral to its usefulness so that only well-executed objects can be beautiful. From a functional perspective, a product is to be used for some purpose. It has to satisfy criteria that are not only functional but also psychological and aesthetic. In accordance with these foregoing interpretations, we subscribe to the notion that product appearance embodies an interplay of aesthetics and functionality in product design.

2.2.5 Combined Effects of Aesthetics and Functionality

Prior consumer research has examined the trade-offs between hedonic and utilitarian goods on consumer attitude (Batra & Ahtola, 1990; Bazerman, Tenbrunsel, & Wade-Benzoni, 1998; Dhar & Wertenbroch, 2000; O'Curry & Strahilevitz, 2001; Okada, 2005a; Voss et al., 2003). Both hedonic and utilitarian goods offer benefits to consumers. The former primarily provides experiential enjoyment, whereas the latter offers practical functionality. Bazerman (1998) described the construct of hedonism as "want," and utilitarianism as "should." What satisfies the want compared to should is more affectively and experiential appealing. Further, Okada (2005a) examined the justification between hedonic and utilitarian alternatives, and showed that consumers respond more favorably to a hedonic good than a comparable utilitarian alternative, but had greater difficulty justifying consumption of hedonic goods. A closely related line of research on product design and trade-offs suggest that consumers prefer hedonic value of a product but only after a certain level of functionality is met (Chitturi et al., 2007). In addition, Chitturi et al. (2008) found that when the product exceeds utilitarian expectations it merely evokes satisfaction, but when it exceeds hedonic expectations it evokes delight. Further, Hoegg et al. (2010) investigated how the conflict between aesthetic and functional features influences consumer's perception by manipulating a less attractive product with superior functionality. They found that aesthetics play a role in product evaluations, and reconciliation of a conflict occurred when consumers attempted to rationalize the superior functionality of a less attractive product. This work also found that products with excellent hedonic attributes (e.g., overstyling attribute) can compensate for suboptimal functionality, but only to a certain point (Hagtvedt & Patrick, 2014). Above all, it indicated that aesthetic or hedonic attributes can lead to more positive consumer attitudes in situations involving trade-offs between aesthetic and functional attribute. But the positive aesthetic effect only occurred when the functionality is at an acceptable level. However, the functional attributes chosen for study by Hagtvedt and Patrick (2014) were deliberately set at very low levels,

i.e., the products had varying levels of functional flaws or inferior performance (Hagtvedt & Patrick, 2014; Hoegg et al., 2010). Thus it is as yet unclear how consumers' perceptions and evaluations of products are affected by different combinations of high and low (i.e., basic) levels of aesthetic and functional attributes.

2.2.6 Individual Differences in Centrality of Visual Product Aesthetics

We further expect that individual differences in the central importance assigned to visual aesthetics by consumers may influence the values that they place on aesthetic versus functional attributes in product perceptions and evaluations. Consumers undoubtedly differ in their taste and preference, and in how much importance they assign to product's visual appearance. For some consumers, this appears to be innate or at least, acquired early in life (Lewalski, 1988). Past research suggests that the causes of the individual differences in tastes are due to design acumen (Csikszentmihalyi & Robinson, 1990), which refers to the ability to make more quick connections in sensory processing and to possessing sophisticated preferences. Holbrook (1986) distinguished between two types of visual processing in aesthetic judgments made by consumers. He asserted that high visualizers attend more closely to visual design elements and have clearer preferences in making product choices than low visualizers. Moreover, Bloch (1995) suggested one's innate design preference and consumer characteristics influence individual tastes. Based in part on these insights, Bloch and colleagues (2003) developed a scale that measures individual differences in the centrality of visual product aesthetics (CVPA). CVPA can be considered a general trait that describes consumer's interest and involvement in product aesthetics and comprises three dimensions: 1) value: the extent to which consumers value beautiful products in their lives; 2) acumen: the ability to recognize, categorize, and appreciate beautiful products; and 3) response: the intensity with which consumers react to beautiful products. They show that as compared to consumers who are low in CVPA, those high in CVPA evaluate products with high (versus low) aesthetic appeal as more attractive, hold more positive attitudes towards them, and report higher purchase intentions. Subsequent studies have shown that high (versus low) CVPA consumers tend to base their product quality judgments more on design (Orth, Campana, & Malkewitz, 2010), to have greater appreciation of symbolic product benefits (Hunt, Radford, & Evans, 2013), and to perceive more meaning from stylistic product information (Schnurr & Stokburger-Sauer, 2016).

The present research investigates how individual differences in CVPA moderate the relationship between the interplay of product aesthetics and functionality, and product liking as well as willingness to pay (WTP). Based on prior findings by Bloch et al. (2003), we expect high CVPA consumers to like the high (versus low) aesthetic products more and also willing to pay more for them than the low CVPA consumers are. In addition, based on the previous findings on trade-offs of aesthetics and functionality, we reason that consumers would appreciate the aesthetic properties of a product only if the perceived functionality meets a minimum level of acceptability (Chitturi et al., 2007; Hagtvedt & Patrick, 2014). We thus focus on different levels of functionality that exceed the basic level of functionality and explore how these functionality levels interact with high versus low levels of aesthetics to affect product evaluations. We reason that even lower (i.e., more basic) functionality may enhance the perceived product value to high CVPA relative to low CVPA consumers especially when combined with high levels of aesthetics.

2.3 STUDY

We conducted an experimental study to test how the high versus low aesthetic levels interact with high versus low functionality levels to affect product aesthetic value, product functionality value, product liking, and willing to pay for the product. We then examined whether individual differences in CVPA moderate the combined effects of aesthetics and functionality on product perceptions, liking and WTP. In so doing, we also sought to replicate the findings by Bloch et al. (2003) that high CVPA consumers would have greater preference for high aesthetic products while low CVPA consumers are relatively indifferent to aesthetic levels.

The main experiment was preceded by pretests to identify and select product stimuli, and also to ensure that they varied in aesthetics and functionality as intended. In the first pretest, we conducted qualitative interviews with three industrial designers with at least five years of professional experience to make aesthetic judgments for a set of products. The designers were asked to look at 96 product images, and then to group them into two categories: “high aesthetics products” or “low aesthetics products.” They were then asked to group the product images evenly into the two categories. This categorization process was iterative and repeated three times in order to achieve consensus among the judges. After this process, 48 product images were identified as

"high aesthetics products" and the other 48 product images were identified as "low aesthetics products" through a down-selection process. The 96 product images included eight product categories that we balanced in terms of aesthetics and functionality: wall clock, chair, desk lamp, water bottle, teapot, backpack, Bluetooth speaker, and toaster. Each product category consisted of 12 individual products.

In a second pretest, 100 Amazon Mechanical Turk workers (52% male, mean age = 34.8) were recruited to complete a study in which they were presented with the 96 product images in random order, one at a time. Each participant thus saw products that were both high and low in aesthetics. The image size was standardized to be 500 x 500 pixels. In order to avoid the influence of brands or contextual information, all the products were presented against a white background without any brand logos. Participants rated each product image on 7-point scales (1=not at all; 7=very much) in response to the following three questions: 1) "Do you think the product is beautiful?"; 2) "Do you think the product look appealing?"; and 3) "Do you think the product is visually attractive?" After finishing all the trials, participants completed a demographic questionnaire and were debriefed.

The three measures were combined to form an aesthetic value index (Cronbach's α=0.95). A one-way repeated-measures ANOVA analysis revealed a significant difference in aesthetic value index between low aesthetics products (M_{LA}=3.99, SD=0.50) and high aesthetics products (M_{HA}=4.51, SD=0.35, $F(1, 99)=62.676$, $p<.001$, $\eta_p^2=.388$. We down-selected 12 products as our main stimuli that consisted of six products with the highest aesthetic value index (M_{HA} = 4.66, SD=0.27) and six products with the lowest aesthetic value index (M_{LA} = 3.70, SD=0.26), $t(10)=6.28$, $p<.001$. The products belonged to three product categories: wall clock, water bottle, and Bluetooth speaker.

2.3.1 Method

Participants and Stimuli

Four hundred and thirty-three university students (44% male, mean age = 21.2) participated in the study in exchange for course credit. The study was a 2 (level of aesthetics: low vs. high) × 2 (level of functionality: low vs. high) within-subjects design. Participants viewed a total of 12

product images (See the Appendix A). For the aesthetics level manipulation, 12 product images comprised four products from each of the three product categories (wall clock, water bottle, and Bluetooth speaker). In each of these product categories, two products had low aesthetics while the other two had high aesthetics as determined by the pretest. All products were accompanied by two descriptions that described the product featured in the images in order to reinforce the aesthetics manipulation. For example, the descriptions for a wall clock in the high aesthetics condition were: "It is a modern art craft design," and "This wall clock is decorative and simplicity." In the low aesthetics condition, descriptions were: "Sturdy plastic case and glass lens," and "Large black bold numbers against a white face." For the functionality manipulation, descriptions varied in the number of functions listed alongside the product image. For low functionality products, two functions were presented while for high functionality products, five functions (different from the two functions in the low functionality condition) were listed.

A pretest of the product functionality manipulation was conducted on 84 Amazon Mechanical Turk workers (48% male, mean age = 28.6) to ensure it would work as intended in the main experiment. Participants were asked to view a product and to rate the extent to which they perceived the product as "multifunctional" on a 7-point scale (1=not at all, 7=very much). The participants rated products that were high (versus low) in functionality as significantly more multifunctional (M_{HF} = 5.74, SD=0.81 vs. M_{LF} = 3.24, SD = 0.89, $t(83) = 12.68$, $p<.001$).

Procedures and Measures

At the beginning of the study, participants were instructed to look at the product images and to read all available product information including aesthetic and functionality descriptions. After looking over each product image and description, participants answered a series of questions (see Table 1). The first set of questions were adapted from a product design scale by Homburg et al. (2015) and related to three dimensions: aesthetics, functionality, and symbolism. For present research purposes, we were primarily interested in aesthetics and functionality, and used only the items that probed these two dimensions. Three items assessing aesthetic value were combined (Cronbach's $\alpha = 0.99$) to create an aesthetics value index, and three items assessing functional value (Cronbach's $\alpha = 0.94$) were combined to create a functionality value index. We then administered a product liking scale using a 7-point scale (-3 = dislike very much, 0 = neutral, +3

= like very much). In addition, participants were given a scenario in which they were asked to imagine that they were shopping online or in a retail store and came across the product. We assessed their willingness-to-pay by asking how much would they like to pay for the product and having the participant type out the amount. Next, participants completed the 11-item CVPA scale (Bloch et al. 2003) by indicating their responses on 7-point scales from 1 (not at all) to 7 (very much). The 11 items were averaged to form a composite measure of CVPA (Cronbach's $\alpha = 0.90$). At the end of the study, participants answered basic demographic questions and were debriefed and dismissed.

Table 1. Product perception and evaluation measures

Variable	**Measurement Items**	Cronbach's α
Aesthetics Value Index	A1: The product is good looking.	
	A2: The product looks appealing.	
	A3: The product is visually attractive.	.99
Functionality Value Index	F1: The product performs well.	
	F2: The product is capable of doing its job properly.	
	F3: The product is functional (practical).	.94
Product Liking	P1: How much do you like this product?	---
Willingness-to-Pay	WTP: Please imagine that you are looking for this kind of product, and you see the product when you are shopping. How much would you be willing to pay for it?	---
CVPA	Owning products that have superior designs makes me feel good about myself.	
	I enjoy seeing displays of products that have superior designs.	
	Beautiful product designs make our world a better place to live.	
	Being able to see subtle differences in product designs is one skill that I have developed over time.	
	I see things in a product's design that other people tend to pass over.	
	I have the ability to imagine how a product will fit in with designs of other things I already own.	
	I have a pretty good idea of what makes one product look better than its competitors.	
	Sometimes the way a product looks seems to reach out and grab me.	
	If a product's design really "speaks" to me, I feel that I must buy it.	
	When I see a product that has a really great design, I feel a strong urge to buy it.	.90

2.3.2 Results

A 2 (Aesthetics: high vs. low) × 2 (Functionality: high vs. low) × 3 (CVPA: high vs. medium

vs. low) mixed ANOVA analysis was conducted. The CVPA was between-subjects factor while the other factors were within-subjects factors. An overall CVPA score was computed for each subject. We then divided the samples into terciles based on the CVPA scores ($M_{\text{high CVPA}} = 4.20$, $SD = 0.37$ vs. $M_{\text{medium CVPA}} = 3.51$, $SD = 0.35$ vs. $M_{\text{Low CVPA}} = 2.66$, $SD = 0.57$, $F(2, 430) = 444.44$, $p<.001$) and calculated scores that were +1 and –1 standard deviation from the mean. In accordance with the previous research approach by Bloch et al. (2003), we focus on comparisons of high CVPA (+1 *SD*) versus low CVPA (–1 *SD*) groups.

Product Aesthetics Value.

As expected, there was a significant main effect of aesthetics level with a higher aesthetic value index for high aesthetic (M_{HA}=5.21, SD=1.52) compared to low aesthetic products (M_{LA}=2.98, SD=1.52), $F(1, 431)=1892.11$, $p<.001$, $\eta_p^2=.814$. We also obtained a significant two-way interaction of aesthetics level × CVPA, $F(1, 431) = 8.97$, $p < .001$, $\eta_p^2 =.020$. Decomposing the interaction revealed that although all respondents had a higher aesthetic value index regardless of CVPA for high compared to low aesthetics products ($t(212)=19.50$, $p<.001$, and $t(280)=17.68$, $p<.001$, for high and low aesthetics, respectively), high CVPA respondents ($M_{\text{High CVPA}}$=5.41, SD=0.91) reported higher aesthetic values than low CVPA respondents ($M_{\text{Low CVPA}}$=4.93, SD=1.03), $t(246)=3.84$, $p<.001$) for high aesthetic products, while there was no significant difference for low aesthetics products ($M_{\text{High CVPA}}$=3.04, SD=0.87 versus $M_{\text{Low CVPA}}$=2.89, SD=0.89, $t(246)=1.34$, *ns*) (as Figure 2, Panel A).

There was also a significant main effect of functionality level with a higher functionality value index for high functionality (M_{HF}=.14, SD=0.81) compared to low functionality products (M_{LF}=4.06, SD=0.79), $F(1, 431)=4.68$, $p=.031$, $\eta_p^2 = .011$. The main effect was qualified by a marginally significant interaction of aesthetic level and functionality level, $F(1, 431)=3.21$, $p=.074$, $\eta_p^2 = .007$ (as Figure 3, Panel A). There was greater aesthetic value assigned to high aesthetic products as well as high functionality products. However, simple effects analyses revealed a greater difference in aesthetic value index for high (versus low) aesthetic products for low than high functionality products. Thus low levels of functionality appear to lead to a bigger change in the difference in aesthetic value between low and high aesthetic products.

Product Functional Value

There was a significant main effect of functionality level with higher functionality value index for products high in functionality (M_{HF}=5.50, *SD*=0.98) compared to those low in functionality (M_{LF}=5.07, *SD*=1.05), $F(1, 431)=176.84$, $p<.001$, $\eta_p^2=.291$. Interestingly, there was also a significant main effect of aesthetic level with low aesthetics products (M_{LA}=5.43, *SD*=1.08) being evaluated as having greater functional value than high aesthetics products (M_{HA}=5.21, *SD*=1.00, $F(1, 431)=30.28$, $p<.001$, $\eta_p^2=.066$). This was qualified by a significant interaction of aesthetic level × CVPA, $F(1, 431)=5.18$, $p=.023$, $\eta_p^2=.012$. Simple effects analyses revealed there was a significant difference in the functionality value index in how high CVPA ($M_{\text{High CVPA}}$=5.41, *SD*=0.78) versus low CVPA ($M_{\text{Low CVPA}}$=5.01, *SD* = 0.96) respondents perceived high aesthetic products ($t(246)=3.08$, $p<.001$), but no difference for low aesthetic products (($M_{\text{High CVPA}}$=5.50, *SD* = 0.95 versus ($M_{\text{Low CVPA}}$=5.28, *SD* = 1.04, $t(246)=1.44$, *ns*). Interestingly, low CVPA respondents evaluated low aesthetics products to be more functional than high aesthetics products (M_{LA}=5.28, *SD*=1.04 versus M_{HA}=5.01, *SD*=0.96, $t(280)=2.31$, $p<.05$), whereas high CVPA respondents did not (M_{LA}=5.50, *SD* = 0.95 versus M_{HA}=5.41, *SD*=0.78, $t(212)=.79$, *ns*) (See Figure 2, Panel B).

Product Liking

Results for product liking was similar to the results obtained for the aesthetics value index. There was a significant main effect of aesthetic level on product liking. Not surprisingly, high aesthetic products (M_{HA}=1.09, *SD*=0.78) were liked more than low aesthetic products (M_{LA}=-0.09, *SD*=0.85), $F(1, 431)=632.93$, $p<.001$, $\eta_p^2=.595$. A significant interaction effect of aesthetic level and CVPA on product liking was found, $F(1, 430)=20.51$, $p<.001$, $\eta_p^2 =.050$, indicating that both high CVPA and low CVPA respondents preferred high aesthetics products to low aesthetics products ($t(212)=12.38$, $p<.001$ for high CVPA; $t(280)=8.81$, $p<.001$ for low CVPA) (See Figure 1C). This interaction was mainly driven by greater liking for high aesthetics products by high compared to low CVPA respondents (($M_{\text{High CVPA}}$=1.21, *SD*=0.82, versus $M_{\text{Low CVPA}}$=0.86, *SD*=0.82), $t(246)=3.32$, $p<.001$), and no difference in liking between the two CVPA groups for low aesthetics product ($M_{\text{High CVPA}}$=-0.19, *SD*= 0.83 vs. $M_{\text{Low CVPA}}$=-0.07, *SD*=0.95, $t(246)=1.00$, *ns*).

There was also a significant main effect of functional level, with high functionality products

(M_{HF}=0.65, SD=0.74) being liked more than low functionality products (M_{LF}=0.35, SD=0.72), F(1, 431)=73.35, p<.001, η_p^2=.145. The main effect was qualified by a significant interaction of aesthetic level and functionality level, F(1, 431)=6.78, p<.01, η_p^2=.015. Although there was greater liking for high aesthetic products as well as high functionality products, simple effect analyses revealed a greater difference in liking between high and low aesthetic product when the products were low rather than high in functionality. Thus there appears to be a bigger difference in liking between high and low aesthetic products when a product has fewer functions. This effect was not moderated by CVPA (See Figure 3, Panel B).

Willingness to Pay

Because the products (wall clock, water bottle, Bluetooth speaker) in the study varied in terms monetary value, we standardized the WTP responses to create Z scores of the raw WTP amounts (zWTP) within each product category. We thus report results on zWTP. (Analyses using WTP measures provided consistent results and are available upon request from authors). Analyses of effects on zWTP yielded results that were consistent with those reported for product liking. There was significant main effect of aesthetic level, with greater zWTP for high aesthetic products (M_{HA}=0.30, SD=0.71) than low aesthetic products (M_{LA}=-0.30, SD=0.53), F(1, 431)=787.63, p<.001, η_p^2 =.646. A significant interaction effect of aesthetic level and CVPA on zWTP was obtained, F(1, 431)=13.11, p<.001, η_p^2=.030. It indicated that both high and low CVPA respondents were willing to pay more for high aesthetics products than low aesthetic products (t(212)=7.36, p<.001; t(280)=6.81, p<.001, respectively). This significant interaction was mainly driven by high CVPA respondents who indicated higher zWTP than low CVPA respondents for high aesthetic products ($M_{High\ CVPA}$ =0.41, SD=0.77 versus $M_{Low\ CVPA}$ =0.19, SD=0.73, t(246)=2.55, p<.001), while there was no significant difference in zWTP for low aesthetics products ($M_{High\ CVPA}$=-0.26, SD 0.56 versus $M_{Low\ CVPA}$=-0.36, SD=0.56, t(246)=1.33, *ns*) (See Figure 2, Panel D).

There was also a significant main effect of functional level, F(1, 431)=97.07, p<.001, η_p^2=.184. Again as would be expected, participants were willing to pay more for products with high functionality (M_H =0.10, SD=0.64) than low functionality (M_{LF}=-0.10, SD=0.60). The main effects were qualified by a significant interaction of aesthetic level and functionality level, F(1, 431)=6.61, p<.01, η_p^2=.015. Simple effect analyses to decompose the interaction revealed a greater

spread in zWTP for high versus low aesthetic product in the low functionality than high functionality products condition. Thus low levels of functionality resulted in a greater boost in zWTP for high aesthetic products relative to low aesthetic products. This effect was not moderated by CVPA (See Figure 3, Panel C) consistent with results for product liking.

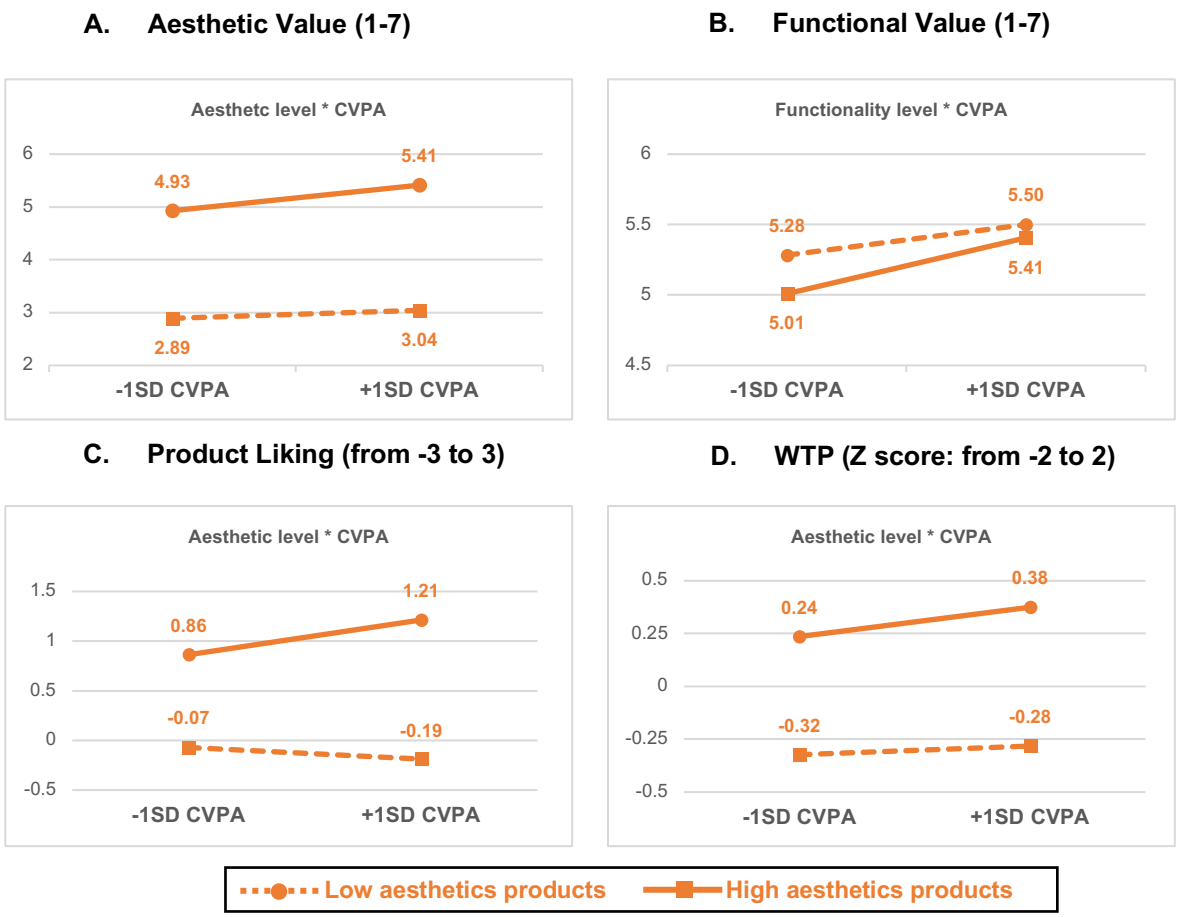

Figure 2. Moderating effect of CVPA on product evaluation measures

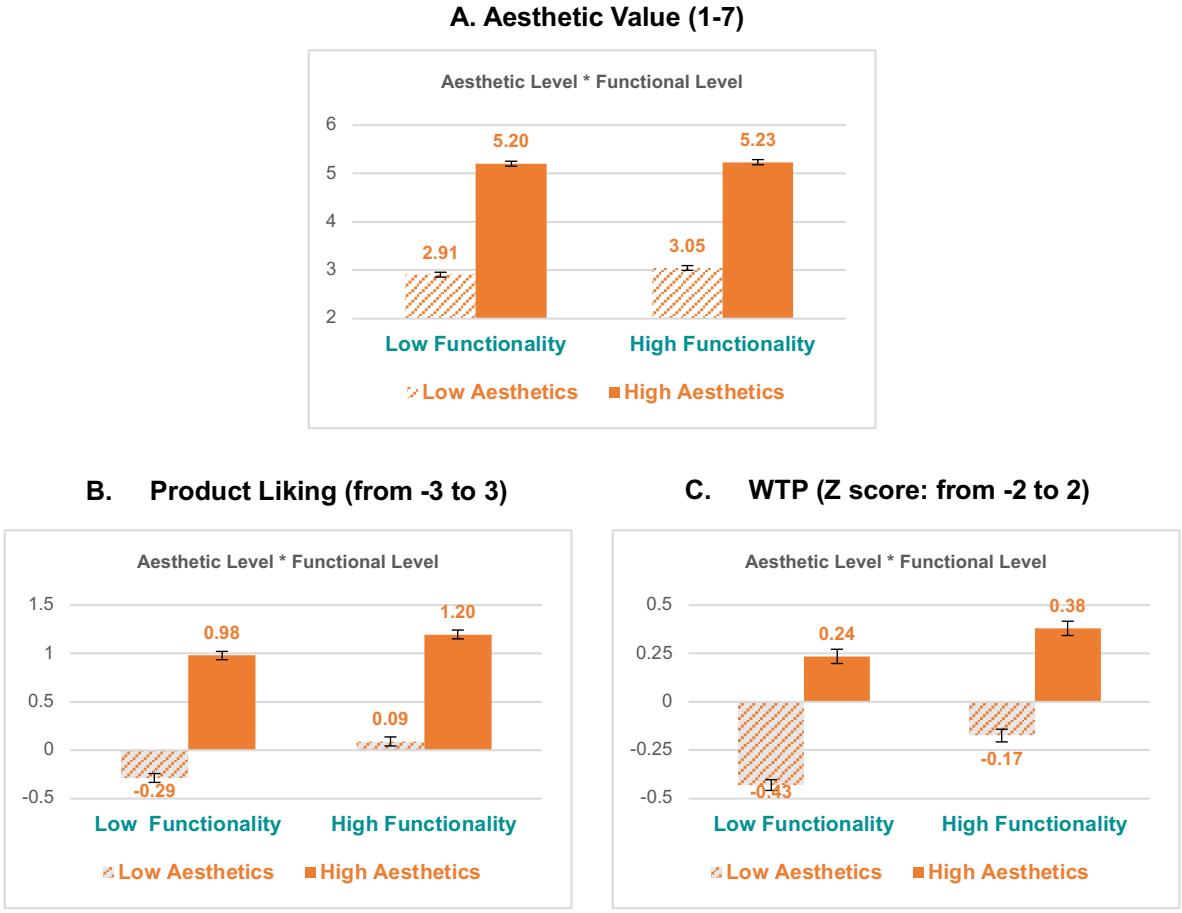

Figure 3. Interaction of aesthetic and functional level on product evaluation measures

2.3.3 Discussion

As expected, high aesthetic products were evaluated more positively than low aesthetic products on all dependent measures. Consistent with prior findings by Bloch et al. (2003), this effect was more pronounced among high CVPA consumers. A significant interaction effect of aesthetic level and CVPA was robust across aesthetic value, product liking, and WTP measures. Specifically, while all consumers preferred high aesthetic products to low aesthetic products, high CVPA consumers perceived a bigger positive difference when a product was high (versus low) in aesthetics. It supports the notion that consumers with higher levels of CVPA do indeed assign greater importance to aesthetic aspects of a product.

Interestingly, low CVPA consumers appeared to perceive low aesthetic products as having

greater functionality than high aesthetic products. Given the questions about functional value were intended to capture evaluations about basic functions such as "does this product do its own job properly?" or "does the product perform well?" this is perhaps not surprising. As opposed to high CVPA consumers, low CVPA consumers were presumably less likely to concern themselves with styling cues for functional evaluation. Instead, low CVPA consumers may have inferred greater functional value in products that were lower in aesthetics. This is compatible with the notion that a useful product design is not necessarily a pleasurable one.

The study also revealed a significant interaction effect of aesthetic level and functional level on aesthetic value, product liking, and willingness to pay. The interactions were primarily driven by a greater spread in evaluation between high and low aesthetic products when they were low rather than high in functionality. In other words, products with low levels of functionality received a bigger positive boost in evaluation when higher in aesthetics. That we did not observe a moderation by CVPA suggests that high CVPA consumers' perceptions of aesthetic value, as well as product liking and WTP, are not differentially sensitive to the joint effects of functionality and aesthetics.

2.4 GENERAL DISCUSSION

The present research complements and extends prior research that has investigated trades-offs of product aesthetics and functionality. Previous research has shown that aesthetics can increase product attractiveness when functionality is high (Chitturi et al., 2007, 2008; Hoegg et al., 2010). We conceptualize the degree of functionality differently from prior studies insofar as we focus on levels of product aesthetics and functionality that are calibrated within somewhat narrow ranges that consumers commonly encounter and consider for purchase in everyday life. That is, the products possess the necessary functional features for them to perform properly, and they range from a basic level (e.g., with relatively few functions) to the extensive (with more functions). We found that when products possess basic (i.e., low) functionality, they do get a bigger boost in evaluation with higher levels of aesthetics. The results obtained across three different product categories and for different (albeit similar) product evaluation measures – aesthetic value, product liking, and WTP.

The present research offers several contributions. First, the findings of this research shed a light on the topic of trade-offs between aesthetics and functionality. Past research has shown visual aesthetic or hedonic attributes dominates a consumer's acquisition and usage of goods (Bloch, 1995; Holbrook, 1986). The present research replicated the prior findings with respect to the centrality of visual product aesthetics (CVPA) and offered insights about product evaluation contexts in which the individual difference is likely to be useful (or not useful). Consumers who value visual appearance will place greater weight on aesthetic attributes in making product evaluations (Bloch et al., 2003). However, the use of aesthetic attributes is not the only way to communicate product design with consumers. Product design conveys an overall impression of design elements to consumers, which may be a more balanced value constructed based on the complementarity between aesthetics and functionality. It is possible that if a consumer tends to place greater value on utilitarian or functional rather than aesthetic aspects, the centrality of perceived product value may shift towards one based on functionality. It is also possible that a consumer may differentially value functionality and aesthetics across different product or consumption domains. Future research is needed to systematically explore these ideas.

When consumers are interested in product design and aesthetics in general, it seems likely that they are not only interested in the visual design elements of a product, but also in additional information beyond the product appearance, such as affordance or metaphor derived from visual aesthetic attributes. In product design domain, affordance refers to how a physical object may be interacted with through its visual attributes such as shape, color, or material. Metaphor refers to the product appearance as the "sign" to make sense of, by providing visual cues to users about product use (Cila, Hekkert, & Visch, 2014). According to these perspectives, visual aesthetic attributes are extremely functional and effective because they imbue products with meanings and values. Hence, products with high aesthetic information may be perceived to function better or have superior functionality. As a consequence, it may cause high CVPA consumers to assess the magnitude of functionality differently because they may be more skilled at processing this type of aesthetic information embedded in functionality. We did not obtain support for this idea in the present research; however, a better operationalization of functionality in future research may be better suited for examining this question.

As we noted earlier, low CVPA consumers evaluated low aesthetic products as being more

functional than did the high CVPA consumers. This seems to suggest that consumers who do not place importance on visual aesthetics may apply different psychological processes to perceive the product in ways that are not captured by the CVPA scale. The use of a scale that assesses utilitarian orientations (Voss et al., 2003) or development of an individual difference scale to measure the centrality of perceived functional value in products may be warranted.

Limitations and Future Research

The present study leaves a number of issues unresolved. First, although the results show that aesthetic value of a product appearance guides the product evaluation among high CVPA consumers, the evaluation may also be related to product symbolic value. To the extent that product appearance carries and communicates symbolic meaning (Creusen & Schoormans, 2005; McCracken, 1986), consumers may attach meaning to the physical product appearance as a way to express themselves. As a consequence, the preference for a specific product appearance is a representation of the kind of person someone is or wants to be. Consumers may utilize products to express themselves and a way to distinguish themselves from others (Belk, 1988; Solomon, 1983). Aesthetic value can be both a hedonic impression and a result of interpretation and representation (Schmitt & Simonson, 1997; Vihma, 1995). Hence, it seems likely that consumer evaluations and attitudes towards products are not only driven by stylistic pursuit but also symbolic meaning. Understanding how the role of symbolic aspects and how they interact with aesthetics and functionality to influence product evaluations warrant future research inquiry.

Finally, individual differences other than CVPA may further elucidate our understanding of the effects of aesthetics and functionality on product perceptions and evaluations. For example, consumers from varied cultural backgrounds might perceive a product differently, and as a result, may evaluate it differently in the marketplace. For instance, extant research has shown that visual perceptions differ based on cultural background, i.e., analytic vs. holistic perception (Nisbett, 2003; Nisbett et al., 2001). Future research is needed to examine how cross-cultural differences might influence perceptions about products that vary in aesthetics and functionality

CHAPTER 3

Culture and Product Visual Representation: Does the Matched Context Enhance the Object Looks More Attractive?

Abstract

Will an object look better when placed in a context that is matched to it? Despite the fundamental significance of these questions of marketing in both business and design, there is surprising paucity of research addressing this question. In the present study, we investigated whether an object would be liked more if placed in a context that is matched to it than if placed in a mismatched context. Moreover, based on previous evidence on cultural variation in holistic attention, we also examined whether the magnitude of this context effect might be more pronounced among East Asians than among European Americans. In two studies, European American, Asian American, and Taiwanese participants (Total N = 568) were shown a series of design objects (e.g., sofa) in one of three conditions, i.e., with no context, in a context matched to the products (e.g., living room), and in a context mismatched to them (e.g., garage). It was observed that the objects were judged as more attractive in the matched context condition than in the no-context condition, providing the first evidence for the affective benefit of matched contextual information on the perceived attractiveness of design objects. Moreover, the objects were rated as the least attractive when placed in mismatched contexts. Surprisingly, we found that there is no cultural difference in context effect. Interestingly, East Asians saw less incongruence when objects were placed in mismatched contexts. However, once the perceived incongruence was controlled, there was no cultural difference in the magnitude of the context effect. Our findings suggest the benefit of matched context in enhancing object attractiveness.

Keywords: Object Attractiveness, Context Effect, Consistency, Cross-Cultural Studies

3.1 INTRODUCTION

Product design is recognized as a competitive advantage for companies in the marketplace. Since many products have reached maturity in their performance and functionality, the aesthetic judgment of objects now plays a more dominant role in marketing to consumers (Postrel, 2003). It has been shown that object attractiveness itself influences consumer's perception of beauty and purchasing decisions (Creusen & Schoormans, 2005; Crilly et al., 2004; Govers & Schoormans, 2005). In marketplace and advertisement, objected are sometimes presented in a context, but other times they are presented in no background. Surprisingly, however, little information is available on possible effects of context on attractiveness of the objects. Will an object look more attractive when it is placed in a matched context? What if the context has some mismatched information to the object? In this study, we investigated whether contextual information that are matched or mismatched to an object would enhance or weaken the perceived attractiveness of the object.

Whenever an object is presented, it is necessarily placed in a certain context. In one extreme, the context may be minimal as when it is no more than a white background. In another extreme, the context could be highly elaborate. Such elaborate contexts may vary in the extent of matching. For example, chairs and sofas are designed for different purposes such as for dining or relaxing in a living room. Thus, dining chairs and relaxing sofas may have a greater match in dining and living rooms, respectively. The relationship between the focal object and its context may be a source of aesthetic judgment. Thus, perceived match with the context (e.g., a dining chair placed in a dining room) may be experienced as pleasing and attractive, and consequently, the extra attraction generated by the perceived match between the object and its context may be attributed to the object itself. If so, the same object may be perceived as more beautiful or attractive when placed in a matched context than in a minimal context. Conversely, when the object is placed in a mismatched context (e.g., a dining chair placed in a living room), the perceived mismatch might also produce additional affect or emotion – this time, negative one. This negative emotion may then be attributed to the object, and it may weaken the perceived beauty or attractiveness of the object. Furthermore, in order to investigate the attractiveness of the object is affected by contextual information, we also tested the holistic attractiveness of the whole visual scene, including both the focal object and context as the counterparts of object attractiveness. In this present study, we tested context effects

to see whether they influence the broader possibilities of the aesthetic judgment for the object.

3.2 LITERATURE REVIEW

3.2.1 Context Effect

Prior work has tested a variety of context effects in psychological judgments. This literature has focused largely on a judgment of a focal object when it is placed in other contextual objects that vary in certain psychological dimensions (Anderson, 1981; Geiselman, Haight, & Kimata, 1984). For example, when a face is placed in a context of other faces that are highly attractive, the perceived attractiveness of the focal face could be either enhanced, due to an assimilation effect, or weakened, due to a contrast effect (Geiselman et al., 1984). A great deal of work has been devoted to understanding the dynamics of assimilation/contrast effect, including visual artwork (Arielli, 2012; Bless & Schwarz, 2010), price and quality perception (Cunha & Shulman, 2011), product line extension (Wanke, Bless, & Schwarz, 1998), and product attractiveness evaluation (Schnurr, Brunner-Sperdin, & Stokburger-Sauer, 2017). Surprisingly, however, few studies exist regarding the effect of perceived match or mismatch between an object and its context. The primary goal of the present work is to fill this gap. We anticipated that an object (e.g., a dining chair) would be perceived more attractive when placed in a matched context (e.g., dining room) than in a minimal context, conversely, it would be perceived to be less attractive when placed in a mismatched context (e.g., living room) than in a minimal context.

3.2.2 Cultural Difference in Product Visual Representation

Our additional goal is to explore potential cultural difference in the effect of matched vs. mismatched context on the aesthetic judgment of a focal object. Cultural products can be conceptualized as a tangible public representation of culture (Morling & Lamoreaux, 2008; Senzaki, Masuda, & Nand, 2014). The visual representations such as drawing, photography, advertisement, media, and web design are one of the dominant cultural products people maintain and consume in everyday life (Masuda, Wang, Ito, & Senzaki, 2012). While the visual representation of marketplace is composed of a focal object and its contextual information (e.g., a

design chair is placed in a cozy studio in a product catalog), people in different cultural backgrounds might perceive an object differently, and consequently may respond differently to representations of object in diverse marketplaces. For example, when a product is sold through the Amazon platform, the identical product is displayed differently depending on countries. On the American site, the displays tend to focus on product features and excludes any contextual information; in contrast, the Japanese Amazon site draws attention to the use of the product in the context as opposed to the American site (see the Figure 4). Do these apparent differences of object representation within contextual information originate from cultural differences? And how these differences reflect its aesthetic judgments? In this study, we further explore the differences of people's aesthetic judgments on the visual representation composed of the focal object and contextual information cross-culturally.

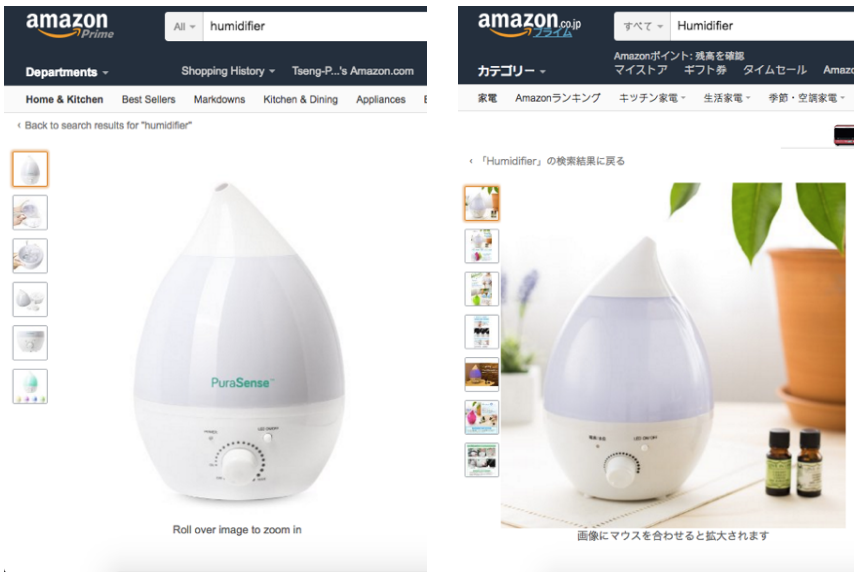

Figure 4. An example of the product visual representation presented in two countries (left is the American Amazon, right is the Japanese Amazon).

3.2.2 Cultural Difference in Cognitive Styles: Analytical vs. Holistic Perception

Prior work in cultural psychology has shown that cultures vary in the extent of attention paid to contextual information (Markus & Kitayama, 1991; Masuda & Nisbett, 2001; Nisbett, 2003; Nisbett et al., 2001). Visual perception has been shown to differ based on cultural background (Nisbett, 2003). Westerners tend to be more analytic in their thinking, while East Asians tend to be

holistic, attending to the entire field (Masuda & Nisbett, 2001; Nisbett et al., 2001). In perceptual tasks, Westerners are described as "context-independent" because they focus on a salient object rather than its context, whereas East Asians attend to the relationship between an object and its context (Chua, Boland, & Nisbett, 2005; Nisbett & Miyamoto, 2005). Americans prefer context-exclusive images more than Japanese, consistent with analytic vs. holistic patterns of attention (Masuda & Nisbett, 2001; Nisbett, 2003; Nisbett & Miyamoto, 2005). As compared to people engaged in European American cultures (European Americans in short), those engaged in East Asian cultures (East Asians in short) are described as more holistic in cognitive style and thus context-dependent. This finding of cultural cognition has been extended in various ways in subsequent studies such as aesthetic appeal of portraits with variations in size of the model and background (Masuda, Gonzalez, Kwan, & Nisbett, 2008), the amount of information on website homepage (Wang, Masuda, Ito, & Rashid, 2012), and artistic expressions of visual artwork (Masuda et al., 2012; Senzaki et al., 2014). Based on the evidence of cultural variation in attentional pattern, we may expect that the context effect on the aesthetic judgment would be pronounced for East Asians than for European Americans. To test these possibilities, we recruited three cultural groups—European Americans, Asian Americans, and Taiwanese—in order to investigate the cultural variation in attentional pattern of visual scenes and its aesthetic judgment.

3.3 STUDY 1

In study 1, we presented design products with no context background, in a matched context, or in a mismatched context, and examined whether the attractiveness of the target object would be affected by the context. Subjects were asked to rate the beauty of each product (target attractiveness) and the beauty of the whole visual scene (holistic attractiveness). We tested European American and Taiwanese participants. We anticipated that object attractiveness would be higher in the matched context than in the no-context control and, further, that it would be lower in the mismatched context than in the no-context control). Further, we examined whether these context effects would be more pronounced for Taiwanese than for Americans.

3.3.1 Method

Participants

We recruited 158 European Americans at a business school in the University of Michigan (M_{age}= 19.2, 45.6% male, 54.4% female) and 57 Taiwanese at the National Cheng Kung University in Taiwan (M_{age} = 20.72, 47.4% male, 52.6% female). Whereas European Americans received a course credit, Taiwanese received the equivalent of $5.

Materials

A collection of home products, including furniture (e.g., coffee tables, chairs), kitchen products (e.g., dining table, cabinets), and lighting (e.g., floor lamps, desk lamps) was used in the study. All of the products were designed as target objects that fit specific functions and were not portable in use (e.g., an armchair set in a living room). We avoided electronic products such as TVs or computers. Each object was shown in a perspective containing its outline, shape, color, material, and detail (see Figure 5a). Three distinct variations of each object image were created: set in a matched context, in a mismatched context, and with no context. See Figure 5 for an example (the desk chair in three versions). In total, three sets of 81 trails were produced included 27 target objects. Within each of the three sets all included three contexts. Participants were randomly presented one of the sets.

(a) target product without context

(b) context matched to target product

(c) context mismatched to target product

Figure 5. The target object presented in three different contexts

Procedure

Upon arrival in the lab, participants were informed that they would be shown a series of objects one at a time, and asked to focus on the target object only. The object was marked by a red arrow (see Figure 1). Participants were first asked two questions about object attractiveness: "*Do you think the product is beautiful?*" and "*Do you like the product itself?*" The third question was a measure used to check the effectiveness of the context manipulation, "*How well do you think the product fits into this context?*" They were then given two additional questions on the attractiveness of the entire scene: "*Do you like the product in this context?*" and "*Overall, do you like the whole picture?*" Participants responded using a 7-point scale). At the end of study, participants completed a demographic questionnaire, reporting age, education, occupation, race, parents' race, citizenship, duration of living in US, location of birth, and English language ability.

3.3.2 Results

Manipulation check

On the perceived fit of the context, there was a highly significant main effect of Context, $F(2, 426) = 251.646$, $p<.001$. Overall, the manipulation was successful such that the fit was rated to be much better in the matched context condition than in the mismatched context condition, with the mean in the no-context control condition falling in-between. However, the interaction between Culture and Context was also significant, $F(2, 426) = 42.04$, $p<.001$. There was no culture effect either in the matched context or in the control condition. However, in the mismatched context condition, the fit was perceived to be much lower by Americans than by Taiwanese ($M = 2.11$, $SD = 0.81$) than for Taiwanese ($M = 3.19$, $SD = 1.01$). The simple interaction between Culture and the Mismatch vs. No context contrast was highly significant, $F(1, 213) = 57.67$, $p<.001$.

Object Attractiveness

We collapsed the first ("*Do you think the product is beautiful?*") and second ("*Do you like the product itself?*") dependent variables ($r = .981$, $n = 215$, $p<.001$) to yield our measurement of object attractiveness. A 2 (Culture, between-subject) X 3 (Context, within-subject) Mixed ANOVA

performed on the perceived attractiveness index showed a main effect of condition F (2, 426) = 41.88, p<.001 (e.g. Table 2), no main effect of culture F (1, 213) = 3.26, p=.072, *ns*. There was no interaction between culture and condition, F (2, 426) = 2.18, *ns*. As expected, focal objects were rated significantly more attractive in the Matched Context condition than in the No Context condition, t(428) =2.32, p<.05. Further, as also expected, the objects were rated significantly less attractive in the Mismatched Context condition than in the No Context condition, t(428) =3.88, p<.001.

Table 2. Means and standard deviations for object attractiveness in Study 1 (n=215)

	No Context		Matched Context		Mismatched Context	
	M	*SD*	*M*	*SD*	*M*	*SD*
Object Attractiveness	4.24	1.05	4.47	0.94	3.86	1.04

Holistic Attractiveness

Further, in order to investigate the holistic attractiveness of the whole visual scenes, we collapsed the fourth ("*Do you like the product in this context?*") and fifth ("*Overall, do you like the whole picture?"*) dependent variables as our measurement of holistic attractiveness. It also showed a main effect of condition F (2, 426) = 225,72, p<.001. The mean was significantly higher in the Matched Context condition (M = 4.62, SD = 0.89) than in the No Context condition (M = 4.25, SD = 1.18), F (1, 213) = 21.36, p<.001, whereas the mean was lower in the Mismatched Context condition (M = 2.71, SD = 0.91) than in the No Context condition (M=4.25, SD = 1.18), F(1, 213) = 196.14, p<.001. There is no main effect of culture F (1, 213) = .774, p=.38, *ns*. Remember, however, that our manipulation check showed that in the Mismatched context condition, Taiwanese did not perceive as much misfit as Americans did. Thus, if the attractiveness of the whole scene was due to the perceived misfit of the object in the context, the lowering of the attractiveness in the Mismatched (vs. Control) condition should be more pronounced for Americans than for Taiwanese. This in fact was the case. The interaction between Condition and Culture was significant, F (2, 426) = 23.54, p<.001. In both the Matched context condition and the Control condition, there was no cultural difference in the holistic attractiveness rating, but this

rating was significantly less for Taiwanese than for Americans in the Mismatched context condition (as Figure 6). Subsequently, a mediation analysis was conducted to show that in the Mismatched context condition, the cultural difference in the holistic attractiveness rating was mediated by the cultural difference in the fit of context rating. If the East Asians perceived less fit of the context, it would be attenuated lowering of the holistic liking rating as compared to European Americans. The mediation analysis results showed that culture was a significant predictor of fit rating, β=1.08, *SE*=.134, p<.001, and that fit rating was a significant predictor of holistic attractiveness, β =.78, *SE*=.004, p<.001. These results support the mediation hypothesis (as Table 3). Culture was no longer a significant predictor of holistic attractiveness after controlling for the mediator, fit rating, β =-.008, *SE*=.009, p=.342, *ns*, which was consistent with full mediation. These results indicated the indirect coefficient was significant, β =.847, *SE*=.161, 95% LLCI=.5547, 95%ULCI=1.1798.

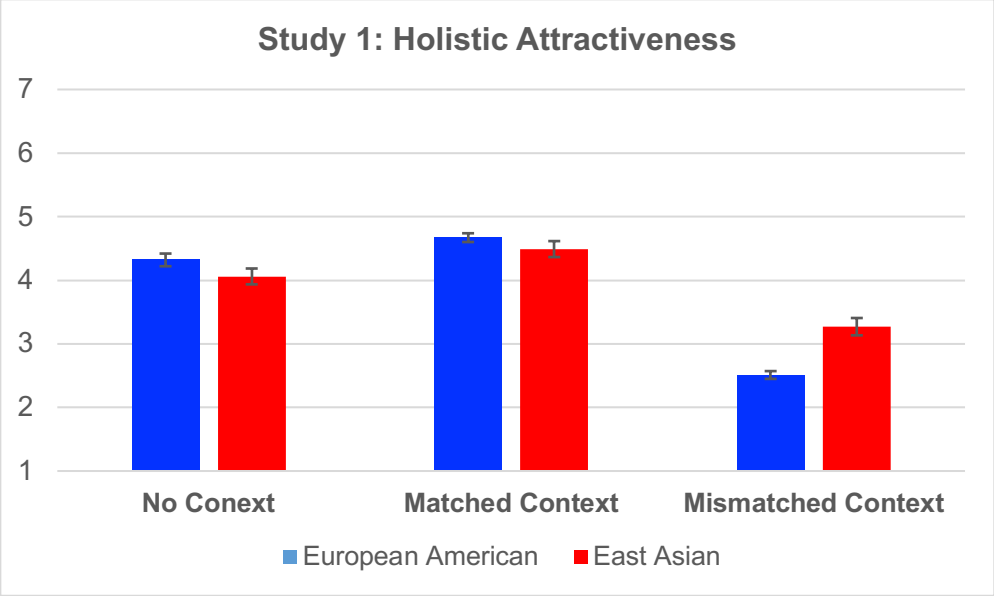

Figure 6. The holistic attractiveness of visual scenes in Study 1

Table 3. The mediation analysis in Study 1 (n=215)

		M (Fit Rating)				Y (Holistic Attractiveness)		
		coeff.	SE	p		coeff.	SE	p
X (Culture)	a	1.080	0.134	<.001	c'	-0.084	0.088	.342
M(Fit Rating)		----	----	----	b	0.784	0.039	<.001
constant	i_1	1.027	0.179	<.001	i_2	0.937	0.111	<.001
		$R^2 = 0.233$				$R^2 = 0.138$		
		F (1, 213) = 64.999, p<.001				F (1, 213) = 34.131, p<.001		

Note: for the categorical predictor of Culture, we coded East Asian group (X=1) and European American group (X=0).

3.3.3 Discussion

In Study 1, we tested whether the attractiveness of design objects could be enhanced when they are placed in matched (vs. mismatched) contexts. Moreover, we explored whether Asians might show this effect more strongly than Americans. We first found that the predicted context effect does exist. Design objects were rated to be more attractive when placed in compatible contexts than in a white background and, conversely, to be less attractive when placed in incompatible contexts than in a white background. Interestingly, Taiwanese reported a relatively attenuated extent of misfit for objects placed in mismatched contexts (e.g., living room sofa in a garage). We suspect that this is due to the fact that historically functional separation of housing space is less common in Asia including Taiwan than in the Western world including the United States. Once this cultural difference is statistically adjusted, there was no evidence that the context effect above varies in magnitude between the two cultures.

3.4 STUDY 2

The goal of Study 2 was to replicate and extend Study 1. In addition to Taiwanese and European Americans, we also recruited Asian Americans to test the idea that Taiwanese perceived less mismatch in the mismatched conditions because typical housing arrangement in Taiwan does not make sharp functional demarcation of different types of rooms within a household. If this is the case, Asian Americans will show a pattern more comparable to European Americans.

3.4.1 Method

Participants

We recruited 171 European Americans at a business school in the University of Michigan (M_{age}= 20.03, 54.9% male, 45.1% female), 75 Asian American at University of Michigan (M_{age}= 19.82, 54.6% male, 45.4% female), and 107 Taiwanese at the National Cheng Kung University in Taiwan (M_{age} = 25.88, 41.1% male, 58.9% female), and. Whereas European Americans and Asian American received a course credit, Taiwanese received the equivalent of $5.

Materials and procedure

The same material used for Study 1 were applied. For the target object, a collection of home product, including furniture (e.g., chairs, coffee tables), kitchen products (e.g., dining table, cabinet), and lighting (e.g., floor lamps, desk lamps) was applied, there are 27 target objects in total. Each object was placed in three different contexts: No Context, Matched Context, and Mismatched Context. In each trial, the target object was indicated by a red arrow to represent as the focal object. In total, three sets of 81 trails were produced included 27 target objects. Within each of the three sets all included three contexts. Participants were randomly presented one of the sets. The context condition was counterbalanced so that specific objects were presented in each context condition equally often across participants. The image presentations for each participant appeared in a randomized order. The same five questions were asked as Study 1 for our dependent variables. Participants answered each question on a 7-point scale to indicate their preference (1, Not at all to 7, Very much). At the end of the study, participants completed a demographic questionnaire and debriefed.

3.4.2 Results

Manipulation check

Analysis of the perceived fit rating shows a significant main effect of Context, F (2, 700) = 680.85, p<.001. The mean fit rating was significantly greater in the Matched Context condition (*M*

= 4.64, *SD* = 1.07) than in the No Context condition (*M* = 4.64, *SD* = 0.91), *F* (1, 250) = 139.17, *p*<.001. Conversely, the rating was significantly lower in the Mismatched Context condition (*M* = 4.64, *SD* = 0.91) than in the No Context condition (*M* = 4.64, *SD* = 0.91), *F* (1, 250) = 538.76, *p*<.001. Further, the interaction between Culture and Context was also significant, *F* (4, 700) = 11.72, *p*<.001. The pattern of interaction is illustrated in Figure 7, Panel A. This interaction was driven by the Mismatched Context condition. As in Study 1, the perceived misfit in the mismatched condition was significantly lower for European Americans than for Taiwanese. Importantly, the perceived fit rating was statistically no different between European Americans and Asian Americans.

Object Attractiveness

We collapsed the questions of ("*Do you think the product is beautiful?*") and ("*Do you like the product itself?*") dependent variables (*r* = .903, *n* = 353, *p*<.001) to yield our measurement of object attractiveness. A 3 (Culture, between-subject) X 3 (Context, within-subject) Mixed ANOVA performed on the perceived attractiveness index showed a main effect of Context *F* (2, 700) = 38.26, *p*<.001 (see Table 2). The mean attractiveness raring was significantly higher in the Matched Context condition (*M* = 4.16, *SD* = 1.04) than in the No Context condition (*M* = 3.90, *SD* = 1.04), *F*(1, 350) = 25.581, *p* <.001. Conversely, the rating was significantly lower in the Mismatch Context condition (*M* = 3.74, *SD* = 1.06) than in the No Context condition, *F*(1, 350) = 12.978, *p* <.001 (as Table 4). Unlike in Study 1 we found a significant main effect of Culture, *F* (2, 350) = 11.91, *p*<.001. The rating was higher for Taiwanese (*M* = 4.24, *SD* = 1.10) than for Asian American (*M* = 4.00, *SD* = 0.88), with European American giving the lowest rating (*M* = 3.69, *SD* = 1.02). There was no interaction between Context and Culture, *F* (2, 700) = 1.38, *ns*.

Table 4. Means and standard deviations for object attractiveness in Study 2 (n=353)

	Object Attractiveness					
	No Context		Matched Context		Mismatched Context	
	M	*SD*	*M*	*SD*	*M*	*SD*
European Americans	3.70	1.03	3.90	1.02	3.46	1.00
Asian American	3.92	0.90	4.17	0.86	3.88	0.89
East Asians	4.23	1.07	4.41	1.10	4.08	1.13

Note: European American N= 171, East Asian N = 107, Asian American = 75

Holistic Attractiveness

Again, we collapsed the questions ("*Do you like the product in this context?*") and ("*Overall, do you like the whole picture?"*) as our dependent variables for the measurement of holistic attractiveness. As in Study 1, the main effect of Context proved significant, F (2, 700) = 52.6.07, p<.001. The rating was higher in the Matched Context condition (M = 4.51, SD = 1.00) than in the No Context condition (M = 3.80, SD = 1.08), F (1, 350) = 170.87, p<.001, No Context (M = 3.80, SD = 1.08) and, conversely, it was lower in the Mismatched Context condition (M=2.76, SD = 1.02) than in the No Context condition, F (1, 350) = 317.27, p<.001. The main effect of Culture also was significant, F (2, 350) = 16.94, p<.001. The rating was highest for Taiwanese (M = 4.01, SD = 1.17) than for Asian Americans (M = 3.64, SD = 0.88), with European American giving the lowest rating (M = 3.41, SD = 0.92), F (2, 350) = 16.94, p<.001. Finally, a significant interaction was observed between Context and Culture, F (4, 700) = 5.53, p<.001 (e.g. Figure 7, Panel B). Subsequently, a same mediation analysis was conducted to indicate that in the Mismatched context condition, the cultural difference in the holistic attractiveness rating was mediated by the cultural difference in the fit of context rating. The same results as Study 1 showed that Culture was a significant predictor of fit rating, β=0.24, SE=0.07, p<.001, and that fit rating was a significant predictor of holistic attractiveness, β=0.91, SE=0.02, p<.001. Culture was no longer significant to predict holistic attractiveness after controlling for the mediator of fit rating, β=0.02, SE=0.03, p=.481 *ns*, which was consistent with full mediation. These results indicated the indirect coefficient was significant, β =0.02, SE=0.03, 95% LLCI=0.1257, 95%ULCI=0.3324 (as Table 5).

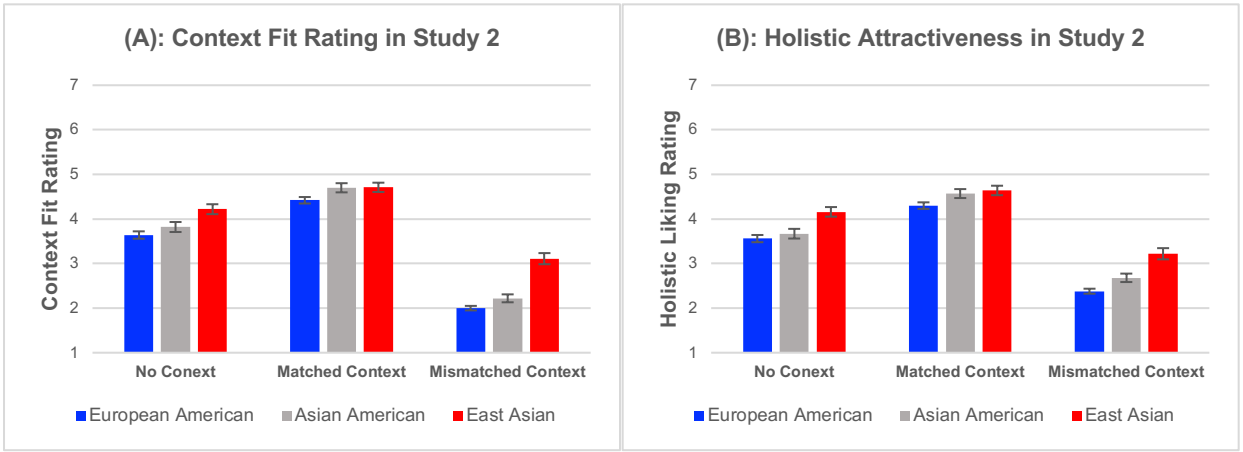

Figure 7. The fit rating and holistic attractiveness of visual scenes in Study 2

Table 5. The mediation analysis in Study 2 (n=353)

		M (Fit Rating)				Y (Holistic Attractiveness)		
		coeff.	SE	p		coeff.	SE	p
X (Culture)	a	0.245	0.068	<.001	c'	0.018	0.026	0.481
M(Fit Rating)		----	----	----	b	0.908	0.020	<.001
constant	i_1	1.956	0.130	<.001	i_2	0.506	0.062	<.001
		$R^2 = 0.035$				$R^2 = 0.859$		
		F (1, 351) = 12.748, p<.001				F (2, 350) = 1067.344, p<.001		

Note: for the categorical predictor of Culture, we coded East Asian group (X=1) and European American and Asian American group (X=0).

3.4.3 Discussion

In Study 2, we replicated the primary finding of Study 1, that is, the attractiveness of design objects was reliably enhanced when the objects were placed in matched contexts and, conversely, it was reliably impaired when the objects were placed in mismatched contexts. As in Study 1, after statistically correcting for the perceived misfit of an object and its mismatched context, there was no evidence that the context effect reported here varies across cultures. All three groups (Taiwanese, Asian Americans, and European Americans) show the same extent of the effect. Importantly, the reduced perception of misfit in the mismatched context condition for Taiwanese (vs. European Americans) appear to be largely due to the absence of strict functional demarcation of different rooms in traditional Asian household. Consistent with this, the pattern of means in the perceived fit condition for Taiwanese was more similar to that for European, which was no different from the mean for and Asian Americans.

3.5 GENERAL DISCUSSION

Two studies demonstrated both matched and mismatched contextual information affect object attractiveness across two cultures. The results suggest the suitability of contextual information has an impact on object attractiveness and increase its aesthetic judgment. In Study 1 and 2, we examined two dimensions of aesthetic liking: object attractiveness and holistic attractiveness. For

object attractiveness, both studies showed the matched context enhanced object attractiveness than the object was placed in minimal context (e.g., white background) and the mismatched context decreased its attractiveness vice versa among European Americans and East Asians. It indicated that both cultural groups all prefer product presentation in an appropriate context than minimal context, and the mismatched context is the least preferable. These findings of context effect influences aesthetic judgments of the focal object, which are promising and replicated both in Study 1 and 2. Furthermore, we tested the holistic attractiveness both in Study 1 and 2, which intended to investigate the aesthetic judgment of the whole visual scene compared to the object attractiveness. Based on previous evidence of cultural variations in attention (Nisbett, 2003; Nisbett & Miyamoto, 2005; Nisbett et al., 2001), East Asians were described as "context-dependent" and attended to the context and its relationship. We predicted the aesthetic judgment of the whole visual scene among East Asians would be more affected by contextual information than European Americans. However, the results of holistic attractiveness showed that context effect, particularly in mismatched setting, was stronger to influence aesthetic liking among European Americans than among East Asians. It indicates that those with holistic attention of East Asians were more tolerant of mismatched information in aesthetic judgments as compared to European Americans.

Overall, this present study identified that the appreciation of cultural products such as advertisements, design, and the visual representation could be influenced by the suitability of contextual information cross-culturally. The cultural variations in aesthetic judgment of the design object are moderated by the context. In general, for both European Americans and East Asians, the matched context has a benefit to enhance the object attractiveness, whereas the mismatched context has an adverse effect to decrease the aesthetic judgment of the object. However, the cultural differences moderate the aesthetic judgment of the mismatched context setting particularly. In both studies, we found the cultural differences of mismatched conditions when they judged the whole visual scene were mainly caused from physical environment they lived in, instead of attentional pattern we expected initially. Although previous research indicated physical environment would attribute to cultural variation in attentional pattern (Miyamoto, Nisbett, & Masuda, 2006), there is still unclear how attentional pattern influence the aesthetic judgments in different cultural context. In these present studies, presumably, the mismatched contexts pretended to confuse people. For example, the unusual image of a dining chair set in a bathroom was viewed as "out of order" or

unfamiliar to participants. Surprisingly, East Asians showed higher perceptual tolerance for products shown in inappropriate contexts as compared to European Americans. In other words, those with holistic attention of East Asians accepted mismatching visual presentations and indicated greater aesthetic liking even they were acknowledged to a mismatched setting. In contrast, European Americans are sensitive to the logical role of contextual suitability—to draw a line and define what contextual information match or mismatch to the product itself. This logical role to discriminate the contextual information particularly influence the aesthetic appreciation among European Americans as compared to East Asians. These present studies are the primary research to investigate the matched or mismatched context effect would influence the object attractiveness. We admit that our attempts outlined in these studies focused on some specific product presentations and visual scenes. However, we assert that current findings are generalizable and identify several important implications for the research field of cultural psychology and marketing. The implications and limitations are discussed below.

Appreciation of Cultural Products

The first implication of this present study is to contribute to understanding the aesthetic appreciation of mutual constitution of culture and mind (Markus & Kitayama, 2010). Previous research investigated cultural products were created by people maintain and consume cultural meaning systems in a given cultural setting constitute (Morling & Lamoreaux, 2008). People internalized the cultural meaning systems such as values, beliefs, and ideas. Furthermore, they transmitted and produced to cultural products including a variety of public, shared, and tangible representations. Therefore, cultural products are regarded as one of the visual representations such as artwork, advertising, media, and design (Masuda et al., 2012; Senzaki et al., 2014). The aesthetic appreciation for these kinds of cultural products such as the advertisement on website or product-to-context representation was not fully addressed. Previous research found that people from different cultural backgrounds perceive even the same advertisement in quite different ways because advertisement are developed within a specific cultural context. These advertisements can be most fully understood by its member in a given culture, and thus be enculturated in that shared context (Han & Shavitt, 1994; Kim & Markus, 1999). In addition, cultural sensitivity of product-to-context representation may be another evidence of cultural products in current use which is designed within a single dominant culture. For example, Amazon's U.S. site lists product

individually with minimal context, while the Japanese's Amazon site shows products with relevant scenarios or contexts. This present study appears to be the first to establish the aesthetic preference of cultural difference in product representation with contextual information. Our results demonstrated that the aesthetic judgment of products and appreciation of the whole visual scenes are affected by cultural influences. It is important to examine the underlying psychological mechanisms to explain how these cultural variations in aesthetic appreciation arise. Cultural patterns may reveal how aesthetic sense develops as people deal with the demands of surroundings, attention, logical role, and aesthetic gratification, and may account for the strong association between an object and the context.

Cultural Variations in Context Effect and Aesthetic Values

Secondly, past research in cognitive psychology has demonstrated that contexts affects consumer's perception of target stimuli (Bless & Schwarz, 2010; Lee & Suk, 2010). Our present studies investigated the broader possibilities of matched or mismatched context effect and product attractiveness. The concept of context effect is to explain how consumers to use contextual information in order to interpret and evaluate a target stimulus by applying cognition. As a consequence, the more cognitive accessible information is, the more likely that information is to affect the perception of the target stimuli (Stapel & Suls, 2007). Two opposing effects occur when we presented matched or mismatched construct of contextual information: assimilation effect vs. contrast effect. We found that the assimilation effect occurs in matched context we expected because the contextual information is used as an interpretation frame and it make sense of the target object, as a result, it enhances consumer's aesthetic judgments of the target object in the same direction to the matched context. Conversely, the contrast effect occurs in mismatched context because the contextual information is used as a comparison standard and it deviate from the normal perception of the target object in the context, consequently, it decreases consumer's aesthetic judgments of the target object in the opposite direction to the mismatched context. In general, we found both European Americans and East Asians showed the same pattern of context effect whether the assimilation effect or contrast effect in different contextual information.

On the other hand, based on previous evidence of cultural cognition, it may be expected that the context effect of match or mismatch to influence aesthetic judgments on the object would be

salient among those with holistic attention of East Asians than among European Americans. However, we found the cultural differences of context effect might result from logical role they construct instead of attentional pattern as we expected. In these present studies, we found that contextual cue is not only served to guide one's attention, but also it assists to determine the magnitude of aesthetic value. Defining matched and mismatched contextual cues for the object is a very analytical construct and it is based on logical inference, causal explanation, and categorization (Nisbett, 2003). In order to achieve the aesthetic value, people have to define the value of the object and contextual cues separately. Our findings suggest that the European Americans are more sensitive to the logical role of beauty to distinguish the contextual cues from the object particularly in the mismatched setting. The results of Study 1 and 2 showed in the mismatched context, the aesthetic liking among European Americans was significantly lower than among East Asians. It indicates that the logical role to define the aesthetic value plays a substantial role among European Americans as opposed to East Asians. When European Americans confronted inconsistent or incongruent setting between the object and contextual cues, they tended to apply this analytical construct to make the aesthetic judgment. In addition, contextual cues assist the magnitude of the logical role to define the aesthetic value. Since the mismatched setting is highly contrasted between the object and contextual cues, European Americans revealed a stronger effect of logical inference to judge the object less likely in both Study 1 and 2. Even though all the objects in Study 1 and 2 were selected as high aesthetic products, the logical role moderated by contextual cues is still salient among European Americans.

In contrast, East Asians were less likely affected by the logical role to make the aesthetic judgment; instead, they show higher visual tolerance on the mismatched setting. This finding is consistent with the implication of Miyamoto (2006), who indicated that the visual affordance was influenced by socialization difference such as physical environment or street view from a given culture, it modulates people's attention and perception to focus on the salient object or the whole context. Comparing to American physical environment, the street scenes with messy signboards or unorganized building structures erected in the neighborhood are pervasive in East Asian societies such as Japan, Korea, and Taiwan. East Asians are used to expose to context-rich scenes and accept its complexity decade by decade. Therefore, their visual affordance is highly influenced by the cultural environment they engaged. Due to a variety of visual information built by people in a given culture, East Asians represent high visual tolerance and wider acceptance of chaotic

contextual cues to make the aesthetic judgment because they are surrounded and exposed to such complex visual representations continuously. Furthermore, this perceptual habit drives them to conform to cultural and aesthetic values. In sum, these present studies imply that defining the aesthetic value whether the object itself or the whole visual scenes not only depends on how people perceive the object and context visually but also relies on deeper cognitive mastering such as the logical role of categorization for the object and the context.

Cultural Variations in Marketing Applications

Lastly, this present study showed that as compared to both Asian Americans and European Americans, Taiwanese perceive a less misfit between design household objects (e.g., chair) and their context (living room vs. garage). Although this cultural difference is due most likely to different traditions of housing arrangement, i.e., less functional demarcation of different rooms and space in Asian (vs. Western) traditions, it still bear some important practical implications for marketers. This research identifies an important factor in the design and marketing fields since the globalization of commerce extends the sale of products to different cultural areas. This study provides guidelines for designers and marketers to consider how to accommodate product representation within the appropriate contextual information for advertisements on the website. While all cultural groups preferred product presented in matched context, East Asians were more tolerant of a mismatched setting. For example, Western shoppers would prefer a lounge chair displayed in the living room or without any scene-setting, whereas East Asian shoppers would not only prefer the same lounge chair displayed in the living room but also accept the chair displayed in the mismatching scene such as a garage. People are exposed to visual representations of products within and outside of their context of use when making purchases. For example, a row of coffeepots display in a store may highlight the focal product within a mismatching setting such as on the bookshelf compared to a display kitchen with a single coffeepot. This difference of product representation in the context may appear in physical settings, catalogs, online listings, and product advertisements. Another potential paradox is that although we found Western advertisements or websites (i.e., U.S. Amazon site) do not present a context as much as Asian advertisements (i.e., Japanese Amazon site), European Americans still responded to the context as strongly as East Asian did. One possibility is that the contextual information in our present study is quite elaborate and vivid, as a consequence, European Americans may simply be ignorant of context effect.

Another possibility is that there may be a hidden effect of context, especially when the context given is elaborate, many Western consumers may be distracted to the context and look at certain contextual elements as focal object. As a result, Western marketers might try to avoid this hidden context effect and make an advertisement include less contextual information, only highlighting the focal object for consumers. Overall, the present study examines cultural differences in product preference, and it illuminates why current retailers have developed their cultural styles. To understand the roots of cultural variations in aesthetic preference for the product can help marketers and practitioners to investigate the diverse marketplace.

Future Research

We wish to acknowledge a few limitations of the current work. First, the current finding was based on household commodities such as chairs, coffee tables, and floor lamps. It is important to expand the current findings to other domains. For example, will an espresso machine look more attractive in an appropriate context (e.g., kitchen table) than in an incompatible context (e.g., bedroom)? Will there also be no cultural variation in this regard? In particular, the objects we used are relatively high-end products that feature unique styles and aesthetics. Future work should explore whether the context effect might be moderated by the product category: The current effect could be more pronounced for high-end design objects. Second, our work did not test functionality or pragmatic aspects of design objects. For example, some espresso machines could be stylish and aesthetically appealing, but they may be no different from or even less effective in terms of functions of brewing coffee compared to less expensive and less stylish counterparts. Future work should explore whether functionality of objects might influence the extent of context effect. Lastly, there may be important individual differences. For example, people with high centrality of visual product aesthetics (CVPA) (Bloch et al., 2003) might be less influenced by the matched context compared those with low CVPA. In contrast, people with low CVPA does that mean they are more practical and functionality-oriented? And how the contextual effect plays a role in aesthetic and functional purpose across culturally? It is worth investigating multiple dimensions of contextual effect in cultural variations in the future

CHAPTER 4

Culture and Aesthetic Preference: Does the Beautiful Product Assist You to Remember it Better?

Abstract

A major cultural difference has been identified in the form of agency. Whereas European Americans have an independent or disjoint agency, East Asians have an interdependent, conjoint agency. For example, evidence shows that, compared to East Asians, European Americans are more likely to use their internal attributes to guide their actions, and as a consequence, more likely to construe their behaviors as choice. So far, however, it is not clear whether this cultural difference could extend to attention and memory such that European Americans are more likely than East Asians to pay attention to, and as a result, to remember objects they like better. In the current work, we tested this possibility by having European American and East Asian subjects judge a series of aesthetic objects for attractiveness. The subjects were subsequently given a surprise recognition test. Study 1 showed, as predicted, that recognition performance increased as a function of the attractiveness of the stimulus objects for European Americans. However, this liking effect was absence for Taiwanese. Study 2 replicated this finding. Study 3 showed the liking effect of European Americans is due to attention applied to both an object and its context, as shown by the fact that the effect disappears once context is removed from the recognition memory test. We found that the liking effect is salient only among those with independent self of European Americans, but it is absent among East Asians. The finding suggests that those with disjoint agency of European Americans apply the aesthetic preference to guide their choice, and further remember the choice which is more likable to them as opposed to East Asians.

Keywords: Aesthetic Preference, Memory, Contextual Information, Disjoint vs. Conjoint Agency

4.1 INTRODUCTION

A long tradition of research in social psychology has examined preference as a major determinant in predicting behavior. The sizable body of work on attitudes shows that one's affective orientation toward an object or a social issue influence subsequent behavior toward the object or issue. Further, liking and disliking entail behavioral propensities toward approach and avoidance, respectively. Drawing on this insight, researchers have used the motor responses of approach and avoidance to index the extent of preference people might have toward or against a variety of objects. At present, however, little is known about whether preferences might also be related to memory. In the present work, we investigated whether people would remember likable objects better than dislikable objects. Moreover, we tested whether this effect would vary in magnitude across cultures.

Previous work shows considerable evidence linking liking to familiarity. Familiar objects are judged more likable. Past research has shown that frequency effect on word recognition memory, which indicated that frequently used words are better recalled than words that are rarely used (Kinsbourne & George, 1974; Sumby, 1963). Indeed, mere exposure to novel objects is known to increase both familiarity and liking of the objects. The common notion "preference need no inferences" showed that mere exposure effect to an object enhances attitude and affective standing, as a consequence, it increases its preference and attractiveness without cognitive process (Harrison, 1977; Harrison & Zajonc, 1970; Zajonc, 1968, 1980). At present, however, no research exists testing the relationship between liking and memory. This is problematic because there is no assurance that familiar objects are remembered better than unfamiliar objects especially when recognition memory is tested. After all, familiar objects may be recognized even when they are never presented as in deja vu experiences. According to the dual-process theory (Brown, 2003; Cleary, 2008; Rugg & Yonelinas, 2003; Yonelinas, 2002), two types of recognition memory can be risen: recollection-based recognition and familiarity-based recognition. The former occurs when one brings to mind the prior instance in which the current situation previously occurred, whereas the latter occurs when one experiences only a feeling of familiarity with the current situation. Thus, systematic research looking at the relationship between liking and recognition memory is called for. We focus on the recollection memory in order to explore the relationship

between liking and memory.

Some evidence suggests that likable objects may attract more attention. In fact, an object may be perceived as more likable because the object attracts more attention, to begin with. Past research has shown the orienting behavior constructed by gaze direction, is initiative process to establish exposure to a stimulus and gathering information about its characteristics. It indicated that orienting behavior by gazing intrinsically linked to emotionally involved processes such as preference decision (Cranach, 1971). Shimojo and colleagues (2003) investigated the role of orienting in preference formation by using face attractiveness experiment. They argued that gazing at a face, will inevitably lead to its foveation for deeper sensory processing. As a consequence, the attention captured by the face is used as a cue used to build the impression of the face as likable. To the extent that this process can be generalized beyond face perception, we may expect that objects that attract attention may become both likable and memorable. Thus, likable objects ought to be remembered better in a recognition memory task. In the present study, we tested this possibility. We tested whether objects that are rated as more attractive would be better remembered than those that are rated as less attractive.

Since the mechanism postulated by Shimojo and colleagues is very general and likely pancultural, it might initially seem very likely that the effect we expect should also be cross-culturally invariant. However, the last two decades of research in cultural psychology suggest otherwise. Evidence exists that people in Western cultures tend to have relatively more independent self-construals, whereas those in Eastern cultures tend to have relatively interdependent self-construals (Markus & Kitayama, 1991; Triandis, 1995). This fact is important because preference or liking is likely to be a major component that constitutes the agency that is based on an independent self-construal.

When individuals define themselves to be independent, they develop a clear sense of internal attributes including preferences, attitudes, and the like and use these internal attributes to organize their behaviors. Given this cultural script for the self and its action, the self's action is likely to be a highly informative cue of her own preferences. Moreover, once such preferences are identified, they are subsequently used to guide further action. In contrast, when individuals define themselves to be interdependent, they develop a stronger sense of embeddedness of the self in a relationship

with others. Relational features such as one's roles and status are likely to be far more salient and significant than the self's internal attributes such as preferences and attitudes. Thus, given this cultural script for the self and its action, the self's action is less likely to be a potent cue for her own preferences. Moreover, even when some preferences are formed, they are less likely to be used in guiding one's actions. In short, this cultural analysis suggests that the linkable between attention and liking, postulated by Shimojo and colleagues, is likely to be robust primarily for those with independent construal of the self. To examine this possibility, we tested both European Americans and Taiwanese. Since European Americans are likely to be more independent than Taiwanese, we anticipated the relationship between liking and memory to be more robust among European Americans than among Taiwanese.

4.2 LITERATURE REVIEW

4.2.1 Preference and Choice

Choice enables people to pursue objects or activities that best satisfy their own preferences. Making a decision for themselves, they use motivation to construct one's behavior, and consequently, to define their human agency of self. According to the self-determination theory (Deci & Ryan, 1987) in the social psychology domain, people have an inherent need for independence, and choice is an act for constructing autonomy and control over the situation, and consequently, it develops the sense of independence (Markus & Schwartz, 2010; Savani, Stephens, & Markus, 2017). According to the book—*The Paradox of Choice*—written by Schwartz (2004), choices represent a meaning of freedom, autonomy, control, and liberation in people's daily life. Choice is essential to autonomy and it enables people to control their destinies. As the number of available choices increases, the broader possibilities of freedom expands. In North American consumerist society, people make choices to express their personal preference among numerous options in diverse contexts: ordering a cup of coffee among 80,000 drink combinations offered by Starbucks, selecting a dining chair for their dining room from 100 styles from Williams Sonoma, or choosing a song from 45 million tracks on Apple Music store. Life in this kind of consumerist society is center around the availability of a wide variety of flavors, styles, and tastes that enable people to choose through their preference. The choices people make is an action driven by their

internal attributes such as motivations, preferences, and attitudes, and consequently, guides the action to construe one's behavior and define the agency of self.

4.2.2 Cultural Model of Agency: The Self in Action

As aforementioned, if choice enhances an action and guides the agency of self, what implies individual's actions and self? Past research has shown that the cultural model of agency among European Americans constructs the good actions originated in an independent, autonomous self, and the action of this self are disjointed, in order words, actions are separated or distinct from others. In contrast, East Asians reflect another cultural model of agency, which constructs the good actions originated in an interdependent self, and the actions of this self are conjoint, namely actions are anchored by others or in relationship and interacting with others (Markus & Kitayama, 2003). The disjoint agency is widely distributed in the North American context. European Americans described as independent tend to apply disjoint model of agency. As a consequence, choice is an action represented as freedom and choice is contingent on his or her own preferences, goals, intentions, and motives. Choice serves to define, express, and reify the distinct individual. The exercise of choice and the expression of preference are defining the feature of disjoint model of agency. As a consequence, choice is viewed as the engine of independence and European Americans define the self through making the choice in their everyday lives in North America (Markus & Kitayama, 2003; Markus & Schwartz, 2010; Savani et al., 2017). In contrast, East Asians described as interdependent would like to apply the conjoint model of agency. The conjoint model of agency does not prescribe people should choose on the basis of their preference, instead, interpersonal responsibility is valued over personal choice. As the base of interdependence, the person is inherently connected to others, person's actions should be obligated to other's expectation, and thus preferences, goals, and intentions are interpersonally anchored (Markus & Kitayama, 1991). An extensive social psychological literature on choice showed that people expressing their preference through their choices are a fundamental value particularly in North American society.

Kim and Markus (1999) first tested how the meaning of choice varies with the cultural context by asking participants to choose the pen they liked. The pens were always presented in groups of five including a set of four of one color and one of another color. The result showed that the majority of European Americans chose the unique pen as compared to East Asians who chose the

common pen. This result was replicated in subsequent studies demonstrating that European Americans are highly distinctive in their preferences for uniqueness, whereas East Asians tend to choose the majority liked by others or showed no preference (Kim, 2001; Kim & Sherman, 2008; Savani, Markus, Naidu, Kumar, & Berlia, 2010). The differences of construing actions as the choice among two cultural groups indicated that the disjoint model of self, choosing a pen that is different from others, may demonstrate their preference for uniqueness, while the conjoint model of self, choosing a common pen, may communicate the preference for being like others. The meaning of pen choice appears to be consistent with the model of agency is prevalent in a given cultural context. People in both cultural settings may be actively engaged in their action as they choose the pen, but a different model of agency scaffolds their actions, and thus their actions may diverge cross-culturally.

Although previous research has shown European Americans are identified as independent self would like to choose on their basis of preference, few studies investigate the extension of their preference and attention. Do they remember what they like? And how could the individual preference predict the recognition of an object? Based on previous cultural variation in choice and agency, we assumed that the liking effect would predict more pronounced memory performance of the object for European Americans than for East Asians. In this study, we tested these possibilities of how liking effect could influence recognition memory for the target object.

Overview of Studies

In this present study, we examined the cross-cultural applicability of different dimensions of liking effect, to predict how preference is associated with recognition memory. Based on previous evidence of model of agency, we assumed that the liking effect would be more pronounced for those independent self with disjoint agency among European Americans than East Asians who were described interdependent self with conjoint agency. We also focused on everyday choice on consumer items, particularly for the sense of attractiveness. Three studies were conducted both including the preference phase and recognition phase, to test the cultural variation in model of agency and how aesthetic preference would be extended to cognitive process of attention. In the preference phase, we tested a series of aesthetic objects to access attractiveness. Further, we added another similar set of objects to examine their memory in the recognition phase, to ask participants

to identify the object they have seen in the preference phase before. The disjoint model of agency is pervasive in European American contexts and elaborates connection between preference, motivation, and choices, whereas the conjoint model of agency in East Asian contexts does not. We anticipated that European American participants would construct their preference as a choice, and would be more motivated to express their preference through their choice. As a consequence, European Americans would tend to remember the target object better than East Asian participants did. Study 1 investigated whether aesthetic preference (e.g., the liking of the beautiful office chair) would lead to a greater memory performance of the object (e.g., recognizing this beautiful office chair) among European Americans than East Asians. Study 2 intended to replicate this finding by recruiting additional Asian American participants. Finally, Study 3 tested whether the liking effect would disappear once the context is removed from the recognition phase.

4.3 PRE-TEST

In the pretest, we identified and selected product stimuli that are beautiful as we intended. In order to test consumer aesthetic judgment on product design, we only selected household furniture products as our stimuli. There are two reasons selecting for household furniture products in this present study. The first reason is that furniture products are very commonly used in the home environment. Secondly, previous research by Csikszentmihalyi and his colleague on cherished household possessions has shown that furniture products were mentioned most frequently by people (Csikszentmihalyi & Halton, 1981). Furniture products not only presupposed a settled life-style but also represented a person's aesthetic preference. Hence, we excluded electronic consumer products such as TVs or computers to avoid digital interaction with consumers. In total, 141 furniture products were collected from two major international competition catalogues and two well-known furniture firm websites. There are 15 images from the 'iF' (2015), 18 images from the 'G-Mark' (2015), 52 images from the Herman Miller Furniture Company website, and 56 images from the Steelcase Furniture Company website. All of the furniture products were selected as objects that fit a specific environmental function and were not portable in use. These furniture products were outputted on 5x3-inch photo paper as the image stimuli for later pre-selection use. Further, in order to verify the stimuli was high aesthetic products as we intended, we conducted a semi-structured interview with three industrial designers with at least 5 years' professional

experience to preselect these images. To identify representative stimuli, the designers were asked to first look at all of the 141 images, and then to group them into two categories: “very beautiful” and “neutral”. They were then asked to rank the product image in the “very beautiful” category. This pre-selection process iterated three times to generalize the consensus of opinion from three industrial designers. After this process, 27 of the product images were identified as the “very beautiful” products through the down-selection process. These 27 product images include three product categories: chairs, coffee tables, and lamps. Each product category obtains 9 individual products respectively to represent the household furniture product as the stimuli for the experimental use.

4.4 STUDY 1

In Study 1, in the beginning of test, we presented design products as target objects varied in no context background, i.e., a lounge chair in a white background, or in a diverse context such as an office chair in the meeting room. We assessed participants’ aesthetic judgment including aesthetic liking and product preference on those target objects. Later on, participants were given a series of similar target products and ask to identify which target objects were presented in the beginning of test before. To examine whether the memory performance would be affected by the aesthetic liking on attractiveness objects. In addition, we designated the liking effect as two constructs: object liking and holistic liking, which the former measures the liking effect particularly on target objects , whereas the latter measures the liking effect on whole visual scenes. We also tested European American and Taiwanese participants. Duo to previous research on the cultural script of agency, we anticipated that European American participants would show greater memory performance than Taiwanese participants. Further, we tested whether these liking effects would be more pronounced for European Americans than for the Taiwanese.

4.4.1 Method

Participants

We recruited 158 European Americans at a business school in the University of Michigan

(M_{age}= 19.2, 45.6% male, 54.4% female) and 57 Taiwanese at the National Cheng Kung University in Taiwan (M_{age} = 20.7, 47.4% male, 52.6% female). Whereas European Americans received a course credit, the Taiwanese received the equivalent of USD $5.

Materials

27 product stimuli were selected from the pretest result, including three product category: chairs, tables, and lightings, and each product category contains 9 representative products. To assure that 27 target objects were presented in the same perspective and manner, we used the Google SketchUP 3D modeling computer program (SketchUP, San Francisco, California) to depict identical versions of each product. Each product was shown in the 45-degree perspective containing its outline, shape, color, material, detail, and presented with a white background. Each target object was also placed in two different versions of contextual background. In total, there were three sets of study in the experiment, and each set of study included 27 target objects within the No context and Context version. Participants were randomly presented one of the sets. The context version stimuli were counterbalanced across participants. The stimuli presentations for each participant appeared in a randomized order. In sum, 27 of the target objects images were used as Study 1 material as experimental stimuli (as Figure 8).

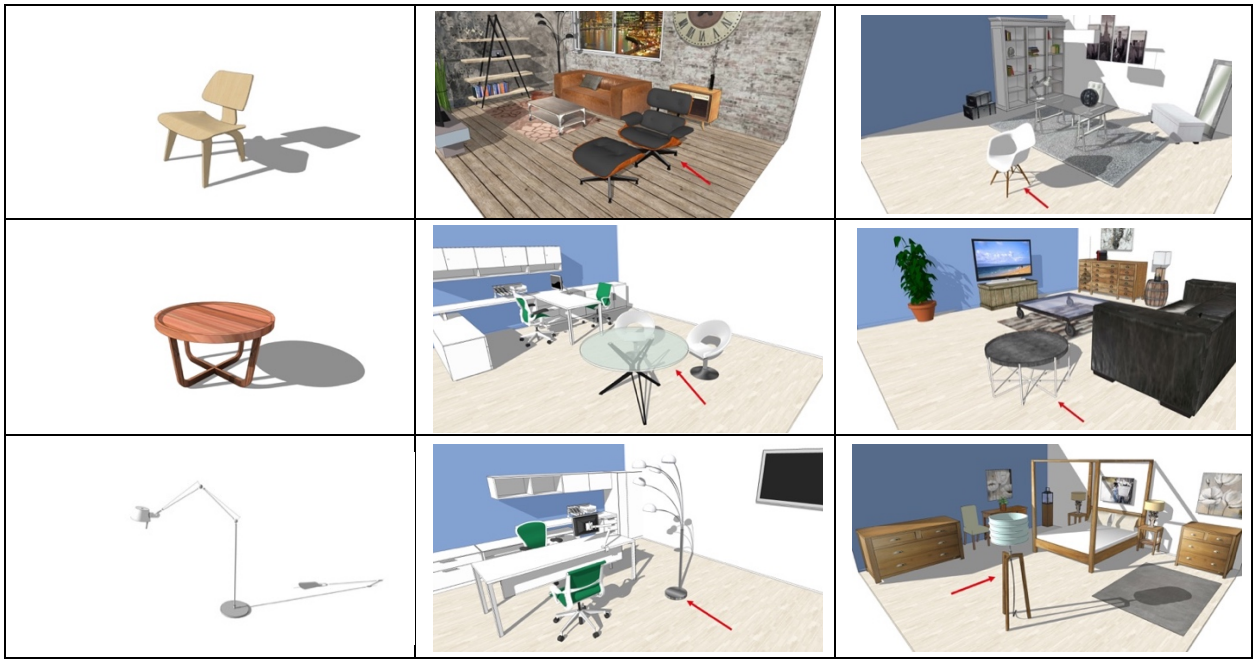

Figure 8. Examples of target objects in preference phase in Study 1

Procedure

There are two phases of the experiment including the preference phase and recognition phase. In the beginning, participants were informed that they would be shown a series of objects one at a time, and asked to focus on the target object only. The object was marked by a red arrow (see Figure 9a). Participants were first given two questions about object attractiveness, which was intended to ask them only to focus on target objects: "*Do you think the product is beautiful?*" and "*Do you like the product itself?*" Later, they were then given two additional questions on the attractiveness of the entire scene" "*Do you like the product in this context?*" and "*Overall, do you like the whole picture?*" Participants responded using a 7-point scale. After participants finished the preference phase, we asked participants to engage in a 10 minutes long distraction test, which is unrelated to preference and recognition tasks. The purpose of conducting a distraction test before the recognition phase is to clean the participant's working memory of the previous preference phase. It will help to standardize their memory performance for following the recognition phase.

Next, participants were given a series of distractive objects, which were similar to target products presented in the previous preference phase. To clarify the task, we informed participants to recognize the target object only and they were shown a sample picture informing them which object in the picture is the target object indicated by a red arrow before they started to official trials. The only difference of pictorial stimuli between the preference phase and the recognition phase is the replacement of the target object. We substituted similar sets of distractors in the recognition phase for target objects in the preference phase. The rest of background information remained the same (see Figure 9b). Participants were asked to identify as fast as possible the target object that had actually appeared in the previous phase. They responded with "*Yes, I have seen it before*" or "*No, I have not seen it before*" keys to indicate whether they had previously seen the target objects. In sum, there are 54 stimuli in the recognition phase, including 27 original target objects and 27 distractors with the same background information. At the end of the study, participants completed a demographic questionnaire, reporting age, education, occupation, race, parents' race, citizenship, duration of living in US, location of birth, and English language ability.

(a) Example of target object in preference phase (b) Example of distract object in recognition phase

Figure 9. Examples of the target object and the distract in Study 2

4.4.2 Results

Object Liking

We collapsed the first ("*Do you think the product is beautiful?*") and second ("*Do you think the product itself?*") dependent variables (r = .981, n = 215, p <.001) to yield our measurement of object liking. In order to measure association between object attractiveness liking and recognition memory performance, a logistic regression was performed which included the dependent variable of binary response on target object (e.g., "*Yes, I have seen it before*", or "*No, I have not seen it before*") and target object attractiveness liking was the independent variables. It yielded each participant liking effect (β_{object}). First, we examined each cultural group object liking effect is significant than null effect (test value = 0) or not. A one-sample t-test showed both European Americans ($t(157) = 9.199$, p <.001) and East Asians ($t(56) = 2.338$, p <.05) object liking effect is statistically significant than null effect, which indicated that both cultural group remember the object what they liked. Further, an independent-samples t-test was conducted to compare the liking effect between European American participants and Taiwanese participants. There was a significant difference between European Americans ($M_{\text{European Americans}}$ = 0.12, SD = 0.16) and Taiwanese ($M_{\text{East Asian}}$ = 0.08, SD = 0.08), $t(213)$= 1.319, p <.005 (as Figure 10). The results demonstrated that European American remember the target object better via their object liking, and this object liking is salient among European Americans than East Asians as we expected.

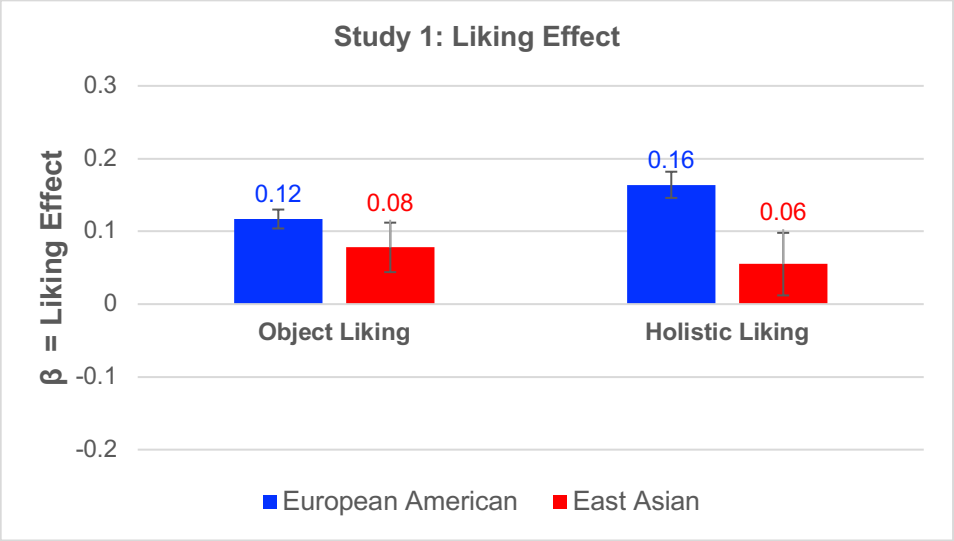

Figure 10. The object and holistic liking effect in Study 1

Holistic Liking

Further, in order to investigate the holistic liking of the whole visual scene, we collapsed the questions from the third ("*Do you like product in this context?*") and fourth ("*Overall, do you like the whole picture?*") to yield the dependent measurement of holistic liking (r = .830, n = 215, p <.001). A same logistical regression was conducted to yield each participants' holistic liking effect ($\beta_{holistic}$). One-sample t-test showed only European Americans ($t(157) = 8.960$, p <.001) holistic liking effect is statistically significant than null effect, but not for East Asians ($t(56)=1.284$, p=.204, *ns*). In addition, an independent-samples t-test was conducted to compare the holistic liking effect between European Americans and East Asians, indicating that there was a significant difference between European Americans ($M_{\text{European Americans}} = 0.16$, $SD = 0.23$) and East Asians ($M_{\text{East Asians}} = 0.06$, $SD = 0.32$), $t(213) = 2.754$, p <.001 (see as Figure 9). It demonstrated that holistic liking effect was pronounced among European Americans than East Asians did, which means European Americans saw the preferred visual scenes including a target object and background information, they tend to remember better for the target object than East Asians did.

4.4.3 Discussion

In Study 1, we tested whether the liking effect of design objects or visual scenes could affect

the attention for the objects. Moreover, we explored whether European Americans might show this liking effect more strongly than East Asians. We first found the predicted object liking effect does exist in both cultural groups. Attractive design objects tend to be remembered better and drew more attention among both European Americans and East Asians. In addition, the holistic liking effect was only salient for European Americans. In particular, we found the liking effects whether object liking or holistic liking were both significantly pronounced among European Americans than East Asians as we expected. This result supported our preliminary hypothesis that independent self with disjoint agency (e.g., European Americans) would construct their preference as a choice and extend to the attention of memory, whereas for those were described interdependent self with conjoint agency (e.g., East Asians) showed relatively less liking effect for the memory of objects than European Americans did.

4.5 STUDY 2

The goal of Study 2 was to replicate and extend Study 1. In addition to Taiwanese and European Americans, we also recruited Asian Americans to test the idea that liking effect would be more comparable to European Americans since they were born and lived in the same cultural contexts. In addition, we might expect the similarity of liking effect between Asian Americans and East Asians because the nurture of parenting from the East Asian family. If this is the case, Asian Americans will show the medium liking effect in the middle of European Americans and East Asians.

4.5.1 Method

Participants

We recruited 171 European Americans at a business school in the University of Michigan (M_{age}= 20.0, 54.9% male, 45.1% female), 75 Asian American at University of Michigan (M_{age}= 19.8, 54.6% male, 45.4% female), and 107 Taiwanese at the National Cheng Kung University in Taiwan (M_{age} = 25.9, 41.1% male, 58.9% female), and. Whereas European Americans and Asian American received a course credit, Taiwanese received the equivalent of USD $5.

Materials and procedure

The same material used for Study 1 were applied. For the target objects, a collection of home products including furniture, kitchen products and lightings was applied, there were 27 target objects including No context and Context version in the preference phase. The same four questions were asked as Study 1 for our dependent variables. Participants answered each questions on a 7-point scale to indicate their preference (1, Not at all to 7, Very much). After the preference phase, participants were given a distraction test which was unrelated to the main study. Next, the same material and procedure as Study 1 in the recognition phase, participants were given another 27 distractors which were similar to the target objects presented in the precious preference phase. They will be asked to respond the question ("*Yes*" or "*No*") as fast as possible to identify which objects were actually appeared in the preference phase. In sum, there were 54 stimuli in recognition phase which included 27 original target objects and 27 distractors with the same contextual background. At the end of study, participants completed a demographic questionnaire, reporting age, education, occupation, race, parents' race, citizenship, duration of living in US, location of birth, and English language ability.

4.5.2 Results

Object Liking

The same analysis procedure was proceeded, we collapsed the questions of ("*Do you think the product is beautiful?*") and ("*Do you think the product itself?*") to yield the dependent variable as the object attractiveness (r = .905, n = 353, p <.001). A logistical regression was conducted to measure the individual's object effect (β_{object}). First, we examined each cultural group object liking effect is significant than null effect (test value = 0) or not. A one-sample t-test showed both three cultural groups : European Americans ($t(170) = 11.231$, p <.001), Asian Americans ($t(74) = 6.656$, p <.001), and East Asians ($t(106) = 4.346$, p <.001) were statistically significant than null effect, which indicated that all of cultural groups remember the objects they liked. Further, a one-way analysis of variance (ANOVA) was conducted to compare the object liking effect for these three cultural groups. The analysis was significant, $F(2, 350) = 5.482$, p<.001. It showed that liking effect is most pronounced among European Americans ($M_{\text{European Americans}} = 0.18$, $SD = 0.21$) than

Asian Americans ($M_{\text{Asian Americans}} = 0.14$, $SD = 0.18$), and the least is East Asians ($M_{\text{East Asian}} = 0.10$, $SD = 0.23$). Comparisons indicated that the object liking effect of European Americans was significantly different from East Asians, $t(350) = 3.301$, $p < .001$. However, there was no statistical significance between European Americans and Asian Americans, $t(350) = 1.372$, $p = .171$, *ns*, either between Asian Americans and East Asian, $t(350) = 1.441$, $p = .151$, *ns*. The results replicated the finding of Study 1 and supported our predication that the object liking effect among European Americans was particularly notable as opposed to East Asians. In addition, Asian Americans showed comparable liking effect pattern in the middle between European Americans and East Asians as we expected (as Figure 11).

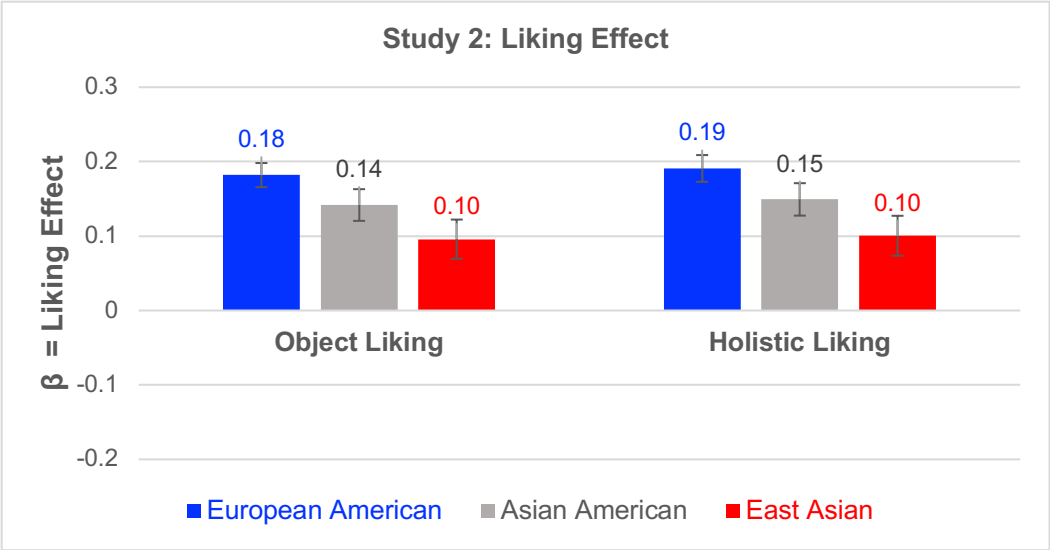

Figure 11. The object and holistic liking effect in Study 2

Holistic Liking

Again, we collapsed the questions ("*Do you like product in this context?*") and ("*Overall, do you like the whole picture?*") to yield the dependent measurement of holistic liking ($r = .827$, $n = 353$, $p < .001$). A same logistical regression was conducted to yield each participants' holistic effect (β_{holistic}). One sample t-test showed the holistic liking effect of three cultural groups: European Americans $t(170) = 10.637$, $p < .001$), Asian American ($t(74) = 6.852$, $p < .001$), and East Asians ($t(106) = 4.472$, $p < .001$), were all statistically significant than null effect (Test value = 0). It showed a positive association between liking of whole visual scenes and recognition memory,

which indicated that when a target object placed in a preferred context, the overall liking on the visual scene would enhance the memory of target object. This effect existed among all three cultural groups. Further, A one-way analysis of variance (ANOVA) was examined to compare the holistic liking effect for these three cultural groups. The result of analysis was similar to object liking effect pattern and it was significant , $F(2, 350) = 5.346$, $p<.001$. It showed that holistic liking effect is most pronounced among European Americans ($M_{\text{European Americans}} = 0.19$, $SD = 0.23$) than Asian Americans ($M_{\text{Asian Americans}} = 0.15$, $SD = 0.19$), and the least is East Asians ($M_{\text{East Asian}} = 0.10$, $SD = 0.23$). The same comparison as object liking results showed European Americans was significantly different from East Asians, $t(350) = 3.262$, $p <.001$. However, there was no statistical significance between European Americans and Asian Americans, $t(350) = 1.335$, $p =.183$, *ns*, either between Asian Americans and East Asian, $t(350) = 1.441$, $p =.150$, *ns.* The holistic liking effect pattern was followed the object liking effect and it replicated the Study 1. This supported our hypothesis that people tend to remember what they liked whether the objects or whole visual scenes, and there was a significant cultural variation between European Americans and East Asians, which systematically showed this liking effect was particularly salient only for European Americans as compared to East Asians (see Figure 11).

4.5.3 Discussion

In Study 2, we replicated the primary of Study 1, that is the attractiveness of object or the holistic attractiveness for the object placed in the visual scene would be remember better. It supported our hypothesis that attractive liking could be extend to the recognition memory performance on the objects. In Study 1 and 2, we applied design product as the target objects and tested individual preference on those target object by placing in white background or other contextual information. Further, a surprise recognition test was conducted by adding another set of distractors which were similar to the target objects. The results were robust that recognition memory of the objects were positively influenced by the preference for objects or the overall presentation. This present study is the first study to examine that likeable objects (e.g., product design) may attract more attention. Past research has shown preference formation leads to a orienting behavior by using attractive faces experiment (Shimojo et al., 2003). Study 1 and 2 systematically showed that an object would be perceived as more likable because the object attracts more attention, as a consequence, the likable object lead to better memory once people chose.

Moreover, based on previous cultural script of agency model, we expected this liking effect could be more pronounced for those who were descripted as independent self (e.g., European Americans) than those were interdependent self (e.g., East Asians). Study 1 and 2 showed consistent pattern that European Americans demonstrated stronger liking effect to remember the object what they preferred than East Asians did. This finding implicated that European Americans construe their individual preference as a choice, as a consequence, making a choice could be extend to cognitive processing such as attention or memory. This is consistent with previous research on cultural variation in model of agency. European Americans tend to apply disjoint agency to form the choice as an action, and the action represented not only as the freedom, but also is contingent on individual own preference. This choice-making action is driven by internal attributes such as goals, intentions, and motives, as a consequence, it serves as the engine of independent self and is popular in North America society. In terms of East Asians, although the liking effect was significant weaker than European Americans, we still found the liking effect did marginally exist among East Asians in those two studies. It might be expected that those were often descripted as interdependent self of East Asians, interpersonal responsibility is valued over personal choice, as a consequence, the action of making a choice is relatively less connected to personal preference, instead, personal actions and intentions are interpersonally anchored.

Interestingly, we investigated liking effect is constructed under some degree of contextual attractiveness. In Study 1 and 2, we applied the target objects and distractors were both placed in same contextual information in the recognition phase, but we still found the holistic liking effect were notable particular among European Americans. If the liking effect is context-dependent, it could become attenuated once we remove the contextual information from the recognition phase. In addition, we might also expect that the recognition memory performance of the target object without contextual information would be much lower than the object within contextual information.

4.6. STUDY 3

The goal of Study 3 is to examine the liking effect is context-dependent. According to Study 1 and 2, the liking effect did exist among all of cultural groups, European Americans demonstrated a robust liking effect particularly. In Study 3, we applied the same stimuli including target objects

placed in the contextual background in the preference phase, but we replaced target objects with distracts only in no contextual background in the recognition phase (e.g., the distractor presented in the white background). First, we predicted that once we removed the contextual information for the target object in recognition phase, the liking effect particularly for European Americans would be attenuated or even disappear. Secondly, in terms of recognition memory performance, if the liking is based on contextual information, we might expect that accuracy of recognition memory for the target object would decrease compared to Study 1 and 2 because of visual attractiveness would draw more attention. As a consequence, accuracy of object memory would reduce since the attention is attracted to likable object and its contextual information. In Study 3, we examined these possibilities of liking effect as context-dependent. In addition, we also recruited three the same cultural groups: European Americans, Asian Americans and East Asians, in order to investigate cultural variation in model of agency.

4.6.1 Method

Participants

We recruited 141 European Americans at a business school in the University of Michigan (M_{age}= 20.2, 50.8% male, 49.2% female), 55 Asian American at University of Michigan (M_{age}= 19.9, 53.2% male, 46.8% female), and 140 Taiwanese at the National Cheng Kung University in Taiwan (M_{age} = 22.4, 45.2% male, 54.8% female), and. Whereas European Americans and Asian American received a course credit, Taiwanese received the equivalent of USD $5.

Materials and procedure

The same material used for Study 1 and Study 2 were applied. The only difference of stimuli for Study 3 is that all of target objects were placed in contextual background in the preference phase, which differed from Study 1 and 2 that some target objects were presented in contextual information (e.g., target object in white background). In sum, there were 24 target objects within contextual background in preference phase (as Figure 12, Panel A). The same four questions were asked as Study 2 for our dependent variables. Participants answered each questions on a 7-point scale to indicate their preference (1, Not at all to 7, Very much). After the preference phase,

participants were given a distraction test which was unrelated to the main study. In the recognition phase, participants were given other 27 distractors which is similar to target objects presented in the preference phase. Particularly, either target objects or distractors were only presented by themselves without any contextual background. Participants will be asked to respond the question ("*Yes*" of "*No*") as fast as possible to identify which objects were actually appeared in the preference phase before. In sum, there were 48 stimuli in recognition phase which included 24 target objects and 24 distractors all presented in no contextual background (as Figure 12, Panel B). At the end of study, participants completed a demographic questionnaire, reporting age, education, occupation, race, parents' race, citizenship, duration of living in US, location of birth, and English language ability.

Panel (A): Examples of target objects in preference phase

A1	B1	C1
		
A2	**B2**	**C2**
		

Panel (B): Examples of target objects and distractors in recognition phase

A1	A1'	B1	B1'	C1	C1'
					
A2	**A2'**	**B2**	**B2'**	**C2**	**C2'**
					

Note: prime (') means distractor, for example A1' is the distractor corresponding to A1 (target object)

Figure 12. Examples of target objects and distractors in Study 3

4.6.2 Results

Object Liking

The same analysis procedure was proceeded, we collapsed the questions of ("*Do you think the product is beautiful?*") and ("*Do you think the product itself?*") to yield the dependent variable as the object attractiveness (r = .884, n = 336, p <.001). A logistical regression was conducted to measure as the individual's object effect (β_{object}). First, we expected the object liking effect of each cultural groups would be attenuated particularly for European Americans due to contextual information was removed in the recognition phase. As predicted, a one-sample t-test showed all cultural groups: European Americans ($t(140) = 1.324$, p =.167, *ns*), Asian Americans ($t(54) = 1.343$, p =.185, *ns*), and East Asians ($t(139) = 1.262$, p =.255, *ns*) were not statistically significant than null effect. It indicated object liking effect was weak even for European Americans. Further, a one-way analysis of variance (ANOVA) was conducted to compare the object liking effect for these three cultural groups. The analysis was not significant, $F(2, 333) = 2.009$, p=.136, *ns*. It showed there was no any cultural difference in object liking effect among three cultural groups, European Americans ($M_{\text{European Americans}}$ = -0.07, SD = 0.21), Asian Americans ($M_{\text{Asian Americans}}$ = -0.03, SD = 0.19), or ($M_{\text{East Asian}}$ = -0.03, SD = 0.15) (as Figure 13).

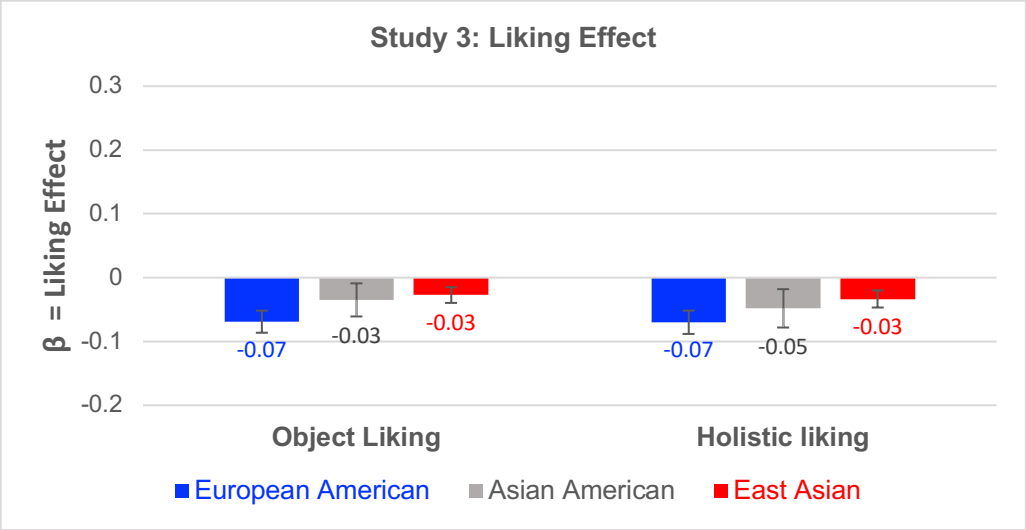

Figure 13. The object and holistic liking effect in Study 3

Holistic Liking

Again, we collapsed the questions (*Do you like product in this context?*") and ("*Overall, do you like the whole picture?*") to yield the dependent measurement of holistic liking (r = .788, n = 336, p <.001). A same logistical regression was conducted to yield each participants' holistic effect ($\beta_{holistic}$). One sample t-test showed the same result as object liking that none of cultural group were significant than null effect; European Americans: $t(140) = 1.784$, p =.125, *ns*), Asian American: $t(54) = 1.600$, p =.115, *ns*), and East Asians $t(139) = 1.627$, p =.183, *ns*). In addition, a one-way analysis of variance (ANOVA) showed that there was no any cultural difference in three groups, $F(2, 333) = 1.228$, p =.294, *ns*. In general, the results of holistic liking effect followed the same pattern of object liking effect, which indicated that once we got rid of contextual information from the recognition phase, whether the object liking or holistic liking effect was null and invalid even for European Americans. It supported our hypothesis that liking was context-dependent and sustained our first prediction that the liking effect would be attenuated when contextual background was removed in recognition phase compared to Study 1 and 2.

Accuracy of Recognition Memory

In order to examine our second prediction that accuracy of recognition memory on the target object would be significantly decreased in Study 3 because attention was attracted to likable object and its contextual information. We tested accuracy of recognition memory through Signal Detection Theory (Green & Swets, 1966), which is methodology widely applied to investigate human sensation and perception in psychology or consumer research domains. Signal Detection Theory (SDT) could applied whenever two possible stimulus types must be discriminated. In this present study, we applied *yes/no* task to test recognition memory. A yes/no task involved signal trails and noise trails, the former presented *old* (e.g., target objects) and the latter presented *new* (e.g., distractors). In our recognition memory phase, it was designed a detection task which included a mix of stimuli contained signals and noise. In our experimental design, we designated signals (e.g., target objects) are exposed in the preference phase, whereas noises (e.g., distractors) consisted of new objects never exposed to before. The goal of detection task in recognition phase was to find the signals in a max of signals and noise. When participants responded to a signal (e.g., the target object) as "*yes*", it was called a "*hit*"; otherwise it was a "*miss*". When participants

responded a noise (e.g., the distractor) as "*yes*", it was called "*false- alarm*"; otherwise it was a "c*orrect rejection*". As a consequence, we calculated the accuracy of recognition memory by adding each trial of hit and correction rejection dividing by the sum of signals and noises response.

As aforementioned methodology, we examined the accuracy of recognition memory by collapsing all trials of each participants for each study. In Study 1, the results showed that 80.3% accuracy for European Americans, whereas 75.3% accuracy for East Asians. In Study 2, it showed that 81.2% accuracy for European Americans; 80.7% accuracy for Asian Americans; and 77.9% accuracy for East Asian. In Study 3, the results were as we expected that the recognition memory accuracy dropped dramatically because of lacking contextual cues in the recognition phase. The results showed that only 69.4% accuracy for European Americans; 70.3% accuracy for Asian Americans; and 69.9 % accuracy for East Asians (see Figure 14). The results supported our second prediction that recognition memory for the object was affected by contextual information. Once we removed the contextual information in the recognition phase in Study 3, the accuracy of discriminating the target or distractor dropped significantly. This result supplemented our hypothesis that liking effect is dependent on some degree of contextual information.

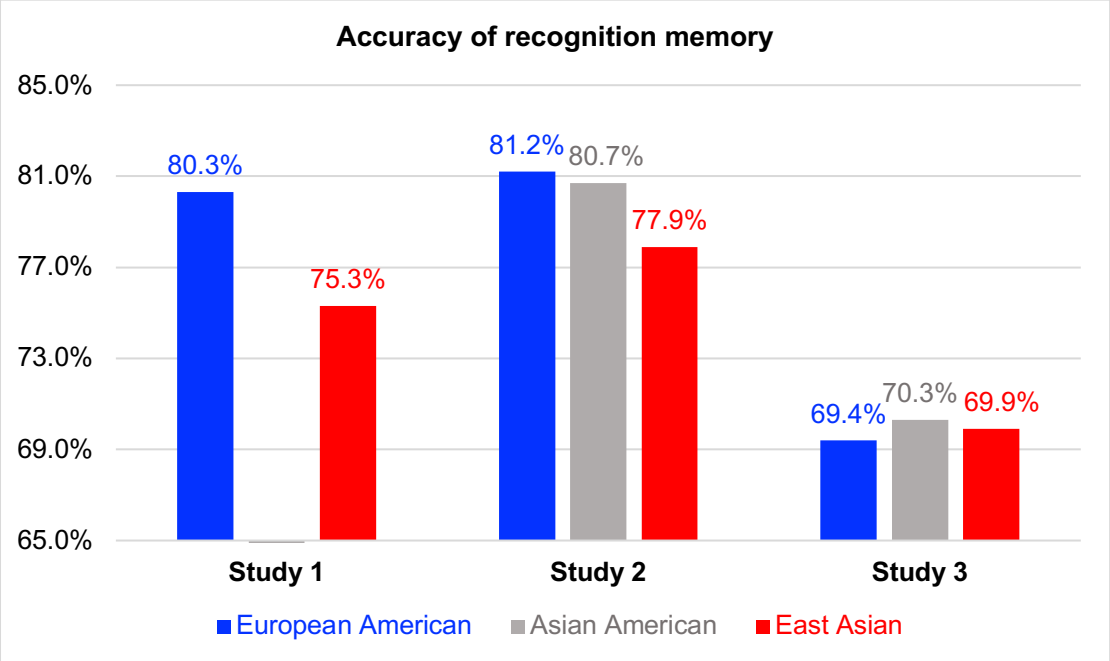

Figure 14. The accuracy of recognition memory across three studies

4.6.3 Discussion

In Study 3, we assumed that attractiveness may draw attention was due to objects were embedded in contextual information. In order words, remembering the object what your liked is depending on contextual cues. There were two predictions we expected: first, we predicted that if we removed the contextual background in the recognition phase, the liking effect would be attenuated. In addition, compared to Asian Americans and East Asians, European Americans demonstrated a robust liking effect to remember the target objects what they liked and chose in both Study 1 and 2. We found the liking effect nearly disappear not only for East Asians and Asian Americans, but also happened to European Americans whose salient liking effect in previous studies. This supported our first prediction that liking effect is as context-dependent. Second, we predicted that the accuracy memory for the target object would be dropped in Study 3 as compared to Study 1 and 2. We found the accuracy of target object discrimination in Study 3 was notably lower than Study 1 and 2. Further, there were no any cultural variations for those cultural groups. It supported our second prediction by adding another supplement that liking is embedded in contextual information, further, it enhanced the cognition processing such as attention or memory. The interpretation is that once participants chose which object they preferred, simultaneously, their choices generated by their liking were embedded in the focal object and the representation of contextual background. As a consequence, the attention was automatically draw by the combination of all visual scenes including a target object and the surrounding context. The attractiveness choices for the object were inherently influenced by context already. Once contextual cues were impeded, it affected the recognition to discriminate the choice they made before. As a result, the performance of memory decreased.

4.7 GENERAL DISCUSSION

These three studies demonstrated the more attractive object would draw people's the attention and showed that people tend to remember what they liked. In addition, based on past research on cultural variations of the agency model, personal preference is likely to be a major component of self-construal. As a consequence, preference could be extended as a way of action and further resulted in cognitive processing, such as attention or memory. Given this cultural agency of self,

those who were described as independent self are likely to have their behavior driven by their internal attributes, such as preference and attitudes. Once such preferences are identified, those independent self are subsequently used to guide further actions, such as choice. In this present study, we focused on consumer everyday choice by using design products and their contextual background to investigate that attractiveness could enhance the attention to the object. We conceptualized the liking effect is people remembering the object they liked. In addition, we explored two possibilities of liking effect by assessing the attractiveness of the object (e.g., object liking) or attractiveness of the whole visual scene (e.g., holistic liking). As aforementioned with the cultural model of agency, we predict this liking effect would be more pronounced among European Americans, who were often described as independent self than East Asians who were viewed as having an interdependent self. In Study 1, we found the liking effect was robust and salient among European Americans as compared to East Asians. Moreover, we replicated this finding and also recruited additional cultural group of Asian Americans to support our hypothesis in Study 2. Furthermore, we investigated the possibility of the liking effect would be influenced by the contextual background. In Study 3, we examined how the liking effect is context-dependent by manipulating the contextual information in the recognition phase. We first predicted that the liking effect would be attenuated once we removed the contextual background in the recognition detection task. Secondly, we predicted that recognition memory accuracy for the object in Study 3 would be less than Study 1 and 2 because attention for the object should be embedded in a contextual cue. Once the contextual cue was impeded, the attention for the object would be interrupted and show lower performance. The results supported our predictions that the liking effect disappeared even for European Americans, who had a salient liking effect in previous Study 1 and 2. In addition, the accuracy of all cultural groups was significantly lower than Study 1 and 2, and there was no cultural variations at all.

Previous research has demonstrated preference as a major determinant in predicting behavior, such as approach or avoidance. This is the first study to examine that preference would be extended to cognitive processing particularly for attention. Moreover, we tested whether this effect would vary in magnitude across cultures. Overall, this present study identified that attractiveness could enhance the attention to the object, and this effect presented robustly among European Americans. Although this study was not designated as the forced-choice task, it was highly valuable that people finding the object is attractive could be viewed as a preference choice as well as a decision. In this

study, we conceptualized the aesthetic liking and attractiveness as the choice and further predicted orientating behavior. Making a choice is a psychological effect and would result in the awareness of the aspect of self, such as perceived competence and efficacy, or inducement of discomfort called "*dissonance*". Although dissonance is typically considered to be pancultural, there may be systematically cross-cultural variations. The discussion and implications of possibilities of the liking effect are as follows.

Liking Effect & Cognitive Dissonance

As aforementioned, cognitive dissonance motivates the individuals to justify the choice they made, and thus causes their preference to be better aligned with the choice. Theoretically, one's preference for a chosen item typically increases, and one's preference for an unchosen item typically decreases. The dissonance of worrying one's choice would moderate their motivation and self-justification. Cognitive dissonance is prevalent just because complete and thorough computation is not performed before the decision (Festinger, 1964). People buy the cars they "like", choose the furniture and house that they find "attractive", and then justify those choices by various reasons that might appear convincing to others who never fail to ask them, "Why this car?" or "Why this lounge chair?" People need not convince themselves. They know what they like and pay attention to their choice they made. As a consequence, liking effect reveals through the choice paradigm in order to reduce the cognitive dissonance.

Liking Effect & Self

Choice and preference enhances an action and guides by the agency of self. Therefore, cognitive dissonance may anticipated an implicit model of agency. Previous research has shown cognitive dissonance is likely to vary across cultures (Kitayama, Snibbe, Markus, & Suzuki, 2004). For an independent self with disjoint agency, choice is construed to be expressive of one's preference. As a consequence, it motivates and ignites one's action to define oneself by making a choice. In the context of independent self (e.g., the North American society), people are strongly motivated to confirm self-defining attributes, such as competence and efficacy (Taylor & Brown, 1988). In contrast, for an interdependent self with conjoint agency, choice evokes interpersonal meaning and a variety of social concerns. Consequently, making a choice is merely routine actions

in the daily life and the choice depends on the need of social approval in relation to others. In the context of interdependent self (e.g., East Asian society), people are motivated to adjust and fit in with the expectations of socially meaningful others (Morling, Kitayama, & Miyamoto, 2002). In sum, cognitive dissonance would occur under a different model of agency depending on a given cultural context. For those with a disjoint model of agency, cognitive dissonance should occur if the choice is expressive of preferences, whereas for those with a conjoint model of agency, cognitive dissonance should occur when choice is expressive of social connectedness. Furthermore, preference or liking serves to define, express, and reify the distinct individual. In terms of one with an independent self, making a choice is the practice of everyday life. As a consequence, expressing individual preference by choice is viewed as the engine of motivation and behavior. For example, in the North American consumerist society, life revolves around the availability of a wide variety of styles, colors, and flavors that enables people to choose through their preference. For example, it is often to heard that "*this thing has my name on that!*" or "*this is so me!*" in the daily life, which implied that people in the context of independent self tend to present his or her self through making a choice. This action is not only a confirmation of personal value, but also an extension of self-efficacy and self-identification.

Liking Effect & Context Effect

Past research on cognitive psychology has shown that context would affect people's perception of target stimuli (Bless & Schwarz, 2010). The concept of context effect is to explain how people use contextual information in order to interpret and evaluate a target stimulus by applying cognition. As a consequence, the more accessible contextual information is, the more likely that contextual information affects the perception of the target stimuli. In this present study, we used the design products as the target objects placed in either by itself or in the visual context. Surprisingly, we found liking effect is embedded in the magnitude of contextual information presented. Theoretically, we assumed liking effect would be vulnerable by the interference of contextual information because we only assessed the recognition memory of target objects in our studies. However, both Study 1 and 2 showed the consistent liking effect, whether the object liking or holistic liking, positively increased the recognition memory accuracy of the target object. Furthermore, once the target object and visual context was isolated, the liking effect disappeared and the accuracy of target object significantly dropped in Study 3. As a consequence, it supported

our speculation that liking effect is context-dependent. This finding contributes to the theoretical literature—information-integration theory—proposed by Anderson (1981) and his colleague, in particular a halo effect that is generalized for the judgments of stimuli within a contextual information. Our finding of liking effect supported the generalized halo effect. In terms of managerial perspective, our finding provided the implication of consumers appraise products and its contextual background. It is not surprising the widespread phenomenon that products are always perceived is some kind of context, such as be it a website, a store, or consumer's homes. Consequently, knowing how context effect affects consumer's perceptions of the product certainly helps companies or retailer stores to display them in a manner that makes them appear most attractive and memorable.

Future Research

We acknowledge a few limitations of the current work. First, the current finding was based on high-end design products such as furniture or home products. Those design products might already include unique styles and aesthetic attributes when participants judged its attractiveness. Although we pre-tested those design products to find the most attractive products, there might still exist a discrepancy between consumer's preference and the object attractiveness itself. We could expand other domains of product category to generalize the liking effect across different product types. Second, this current work didn't manipulate the attractiveness liking. All stimuli were designated as attractive or aesthetically appealing objects in our studies. What if we manipulate the attractiveness by using less attractive objects, does the liking effect still exist or flip due to the horn effect? It would be interesting to investigate the association between liking effect and disliking effect. For example, an ugly product displayed on market might draw people's attention profoundly rather than an aesthetic pleasing product. Further work should explore another dimension of liking effect by examining less stylish counterparts. Third, in this current work, the recognition detection task is not exactly a choice task. Although there is highly correlation between preference and choice, it would be more accurate by using forced-choice task to compare the difference between individual's preference and choice. Lastly, we conceptualized the liking effect is context-dependent, it is worthwhile to investigate the interaction between liking effect and two opposing context effect: assimilation effect and contrast effect. Past research has shown an assimilation effect occurs when context information is used as an interpretation frame. As a

consequence, it helps to make sense of the target stimulus and result in a same direction to the context. In contract, a contrast effect occurs when context information is used as a comparison standard. Consequently, people compare the features of the target stimulus with the context and result in an opposite direction to the context (A.Stapel, Koomen, & Velthuijsen, 1998; Arielli, 2012; Schwarz & Sudman, 1992). Further research will investigate these possibilities of liking effect and context effect.

CHAPTER 5

Conclusion

This dissertation investigated the cross-cultural difference in consumers' product evaluation and aesthetic judgment, particularly how a cultural value affects aesthetic preference and cognitive processing on diverse product visual representations. It explored that individual difference in consumer characteristics responding to visual aesthetics play a roles how they perceived the product value (Chapter 2), a positive context effect enhanced product aesthetic judgments when the product placed in a matched visual representations (Chapter 3), and extended the product aesthetic judgments to further cognitive processing (e.g., attention) (Chapter 4) (as Figure 15).

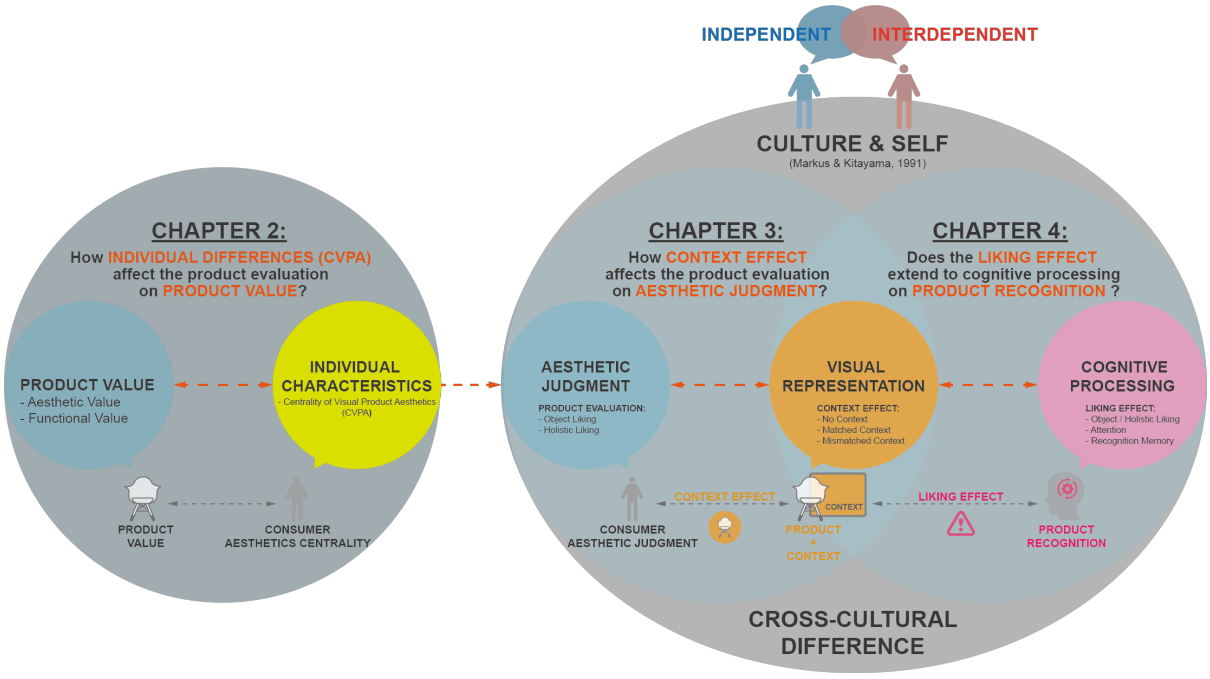

Figure 15. Review of dissertation framework

The first essay (Chapter 2) focused on how consumer individual differences in responsiveness to visual aesthetics (e.g., Centrality of Visual Product Aesthetics—CVPA) influence the way they perceive the product value and product evaluation, as a consequence, resulting in further behavioral action such as decision making and willing-to-pay. Besides, we examined how the CVPA moderates the interplay of aesthetics and functionality on consumer perceptions and evaluations of products. We found high aesthetic products were evaluated more positively than low aesthetic products on all product evaluation measurements, which is consistent with the prior finding by Bloch et al. (2003), and this effect was more pronounced among high CVPA consumers. Moreover, a robust moderating effect between product aesthetic value and CVPA, which indicated that while all consumers preferred high aesthetic products to low aesthetic products, high CVPA consumers perceived a bigger positive difference when a product was high (versus low) in aesthetics. Regarding CVPA and joint effect of aesthetics and functionality, we found products with low levels of functionality received a bigger positive boost in evaluation when higher in aesthetics, but this effect didn't moderate by CVPA. This study first explored the possibilities between consumer internal attributes and product aesthetic value, to better understand the interplays of aesthetics and functionality on product perception and evaluation.

The second essay (Chapter 3) investigated the cultural differences in consumer's aesthetic judgment on the visual product representation. We tested how context effects influence the broader possibilities of the aesthetic judgments for the design object. We found the aesthetic judgment for the objects were evaluated as more attractive in the matched contextual information, whereas it was rated as the least attractive when it placed in the mismatched contextual information. According to past research on cultural variation in attention pattern, we assumed the context effect would be more salient among those people tended to apply holistic attention (e.g., East Asians) than those who applied analytical attention (e.g., European Americans). Surprisingly, we found East Asians perceived less incongruence when objects were placed in mismatched contexts than European Americans did. Once the perceived incongruence was controlled, there was no cultural difference in the magnitude of context effect. The finding suggests the benefit of matched context in enhancing the product aesthetic judgments and this context effect of visual product representation is generalized across-culturally.

Building on this finding, the third essay (Chapter 4) examined the broader aesthetic judgments

(e.g., object attractiveness or whole visual scene attractiveness) could extend to cognitive processing such as recognition memory on the objects, further to predict the orienting behavior. We construed the aesthetic judgments as the action of choice, which enables to pursue and satisfy their preference. As a consequence, making a choice is a way to guide one's motivation and define the human agency of self. In this essay, we tested—*liking effect*—which hypothesized people would construe their aesthetic judgments as the choices, and it enables them to remember the objects what they prefer. Based on the cultural model of agency, European Americans who have disjoint agency are more likely to use their internal attributes guide their actions as the choice by expressing their individual preference. Choice serves to define, express, and reify the distinct individual, as a consequence, choice is viewed as the engine of independent self and is an exercise practicing in their everyday lives particularly in North American society. As aforementioned cultural differences, we found the liking effect would be more pronounced among European Americans than East Asians did as we expected. Moreover, we investigated broader possibilities of liking effect, to examine the liking effect is context-dependent by manipulating the object and its context visual representation. This finding corresponds to the second essay (Chapter 3) that context effect enhances the aesthetic judgment of the object, and it extends to further cognitive attention.

Taking all three essays together, this dissertation demonstrates the critical role of product aesthetic value as a conveyer of cultural experience. It not only reflects cultural value of self but also produces consequences for the cognition and behavior. It expands our knowledge of cultural impact on design as well as how cultural value shape consumer's perception of product aesthetic judgments. This research provides implications for product design, marketing, and social psychology domain, to better understanding the how different cultural experiences influence the product aesthetic value on the diverse marketplaces. This dissertation contributes an important factor in the design of products and marketing as the globalization of commerce extends the sale of products to different cultural areas. From the design perspective, this dissertation provides guidelines for product designers and marketers for considering cognitive differences originating in different consumer characteristics and cultural backgrounds. The first essay (Chapter 1) provide a robust moderating effect on the consumer individual differences in aesthetic centrality and product aesthetic value. For example, a shopper has a high propensity to visual product aesthetics, if he or she sees a lees practical product but with high visually appealing attributes on the market,

he or she still has high product evaluation and purchasing intention due to their internal characteristics. Additionally, the finding of context effect (Chapter 3) showed while all groups preferred products presented in matching contexts, East Asians were more tolerant of a mismatching context. For example, Westerner shoppers would be preferred a lounge chair displayed in the living room or without any scene-setting, whereas, East Asian shoppers would be not only preferred the same lounge chair displayed in the living room but also tolerant of the chair displayed in the mismatching scene such as a garage. Lastly, the liking effect (Chapter 4) extended the finding of context effect to cognitive processing. While all groups tend to remember the products what they liked and chose, European Americans demonstrated a salient liking effect than East Asians did. For example, Western shoppers tend to remember a lounge chair displayed by itself or in an elaborate showroom because they view it as an attractive design and work for themselves. In contrast, East Asian shoppers are less likely to remember this beautiful lounge chair in the showroom than European Americans did, because they think this appealing longer chair in this particular context might work for somebody else such as their families or others.

This research, however, demonstrated one particular case of aesthetic judgment collected in a quantitative manner. Future research will apply qualitative methods to explore deeper aesthetic judgment in nature. Moreover, those studies were conducted in the laboratory experiments, it is still an open question whether product aesthetic value or individual preference could work effectively to influence behavior in natural settings such as retailer stores or online platforms. Lastly, these current findings were based on attractive design products or high-end commodities. Future research will expand to other product categories or apply less attractive objects, to investigate the counterevidence of aesthetic judgments. What if a less attractive object placed in the matched context would be enhanced the liking as well as remember it better? What kinds of people are more sensitive to these effects? Fleshing out such boundary conditions of aesthetic judgments across-culturally will be important in future research.

To conclude, the present research examined how different cultural experiences influence people aesthetic judgments, mainly focusing on the aesthetic experience process which includes how people perceive a design product by visual perception, product representation in the diverse contexts, cognitive processing of recognition on the product, and thus make the aesthetic evaluation for the product. This research enlightens in the beginning question—*what is beauty?*—

by understanding one's personal view and their world from a geographical, historical, and cultural perspective. Indeed, culture, is a variable held responsible for many of differences in people's aesthetic judgments. Cultural experience shaped our ideas, values, perceptions, feelings, goals, actions, and judgments.

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APPENDIX

Product Stimuli Used in Chapter 2 (The first essay)

Table 6. The product stimuli for Chapter 2 : Wall Clock

Product Image	Aesthetic Attributes Description	Functional Attributes Description
Low Aesthetics 	• Sturdy plastic case and glass lens • Large black bold numbers against white face	**Low Functionality** • Easy to hang • Precise quartz movements to guarantee accurate time
Low Aesthetics 	• Aluminum • Light and Classic: Frame has a quality solid Aluminum with smooth surface providing a classic look	**High Functionality** • Easy to hang • Precise quartz movements to guarantee accurate time • Silent non-ticking sweeping movement mechanism. • LCD in the digital dial displays • Multifunctional Thermometer monitor, including temperature and humidity
High Aesthetics 	• Modern Art in craft design • Tough bronze finished frame	**Low Functionality** • Easy to hang • Precise quartz movements to guarantee accurate time
High Aesthetics 	• Glass timepiece with marble effect design, made from natural and high quality marble. • Decorative and simplicity	**High Functionality** • Multifunction position: can be wall mount or used as a table clock • Precise quartz movements to guarantee accurate time • Silent non-ticking sweeping movement mechanism. • High reliability: average battery life is about one year

Table 7. The product stimuli for Chapter 2 : Water Bottle

Product Image	Aesthetic Attributes Description	Functional Attributes Description
Low Aesthetics 	• Simple look • Made from BPA-free, durable Eastman Tritan copolyester material	**Low Functionality** • Tethered lid stays attached to the bottle. • Sip friendly narrow spout features.
Low Aesthetics 	• The solid and rugged style to fit daily lifestyle • Signature vividly blue powder coating.	**High Functionality** • No leaks, No Sweat: the water bottles are leak proof, do not condensate (sweat), and do not freeze on the outside. They are easy to keep clean with just soapy water and a bottle brush. • This water bottle features double layer vacuum insulation to keep beverages cold for 24 hours and hot for 12 hours • Safe & Durable materials: the water bottle is made from 18/8 stainless steel and is 100% BPA free. • Wide mouth: large bottle mouth enough for chugging and ice cubes • It also has a really handy loop handle that allows the bottle to be hung from a backpack or other such device.
High Aesthetics 	• The wood collection features a smooth matte finish that emulates the natural beauty of hand-crafted wood sculptures • Iconic shape design	**Low Functionality** • This water bottle features double layer vacuum insulation to keep beverages cold for 24 hours and hot for 12 hours. • Safe & Durable materials: the water bottle is made from 18/8 stainless steel and is 100% BPA free.
High Aesthetics 	• High style integrated with cap design • Threadless, smooth spout design, made from beautifully clear BPA-free glass	**High Functionality** • Twist off Lid: the water bottle reveals wider opening for ice cubes or bottle brushes for effortless cleaning. • Opens with one hand for hassle-free hydration. No hanging or detached caps to distract or lose. • Safety latch on the cap prevents the bottle from being accidentally opened. • Anti-slip soft rubber base protects furniture and prevents sliding on surfaces. • Threadless and smooth spout contours against lip to provide comfort while drinking.

Table 8. The product stimuli for Chapter 2 : Bluetooth Speaker

Product Image	Aesthetic Attributes Description	Functional Attributes Description
Low Aesthetics 	• Cubic design • Compact form factor	**Low Functionality** • Bluetooth Technology: Compatible with all Bluetooth-enabled devices. • Battery life: Up to 6 hours to play
Low Aesthetics 	• Rugged and durable design • Integrated handle design into the body	**High Functionality** • Booming Bass and Full Volume: this speaker has 30W sound with two15 watt full-range drivers and two passive radiators. • Battery life: up to 18 hours to play, 7200 mAh rechargeable battery, fast charge. • Bluetooth Technology: Compatible with all Bluetooth-enabled devices. • Multi-function modes: Karaoke mode / Aux-in mode / Bluetooth mode • IPX7 Waterproof: this speaker has top level waterproof able to withstand full immersion of up to 33 feet for 30 minutes.
High Aesthetics 	• Scandinavian design with simple and stylish look as the minimalist • Classy wool grille cover that wraps around front panel, and integrates with wood matte finished for its natural beauty.	**Low Functionality** • Bluetooth Technology: Compatible with all Bluetooth-enabled devices. • Battery life: Up to 6 hours to play
High Aesthetics 	• The sleek design with seamless aluminum body • The flexible fabric handle makes it feel soft and smooth	**High Functionality** • Deep, loud, and jaw-dropping sound with 360 degree coverage. • Durable, Water-resistant design (IPX7) • Bumpers for bumping: soft materials on the top and bottom let the speaker bump worry-free • Battery life: up to 18 hours to play, 7200 mAh rechargeable battery, fast charge. • Wireless Bluetooth pairing with voice prompts; easily take calls and access Siri or Google